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THE DYNAMIC FORCE OF DRUGS.*

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Wonderful and startling have been the scientific discoveries of the last two decades, bringing about, as it were, an era of the realization of the unreal. Take, for instance, those four great discoveries—the Roentgen ray, radium, wireless telegraphy, and antitoxin. The present-day scientist awaits with eagerness the next miraculous move in the onward march of the human intellect in the limitless fields of wisdom and knowledge. He is eagerly awaiting some discovery that will open new fields for research and new vistas for intellectual speculation. Bacon, Locke, Descartes, Laplace, Newton, Agassiz, and more recently Darwin, Tyndale, Huxley and Spencer have made their impressions on the human intellect, yet these thinkers and writers have passed into the great beyond, doubting much and leaving myriads of human minds in like perplexity and doubt. None of these scientists has given us as yet any plausible explanation or theory of the influence of mind over matter. We are still groping in the dark, and the almost universal present-day yearning after this solution has given birth to numberless "isms," and man's intellect has become the plaything for numerous fakers, mountebanks and quacksalvers, who find in this general intensity of intellectual expectancy a ready market for the sale of their bogus wares.

To the well-poised, scientific mind, the birth and propagation of these various and vicious "isms" come as a painful shock, and yet what better has the scientist to offer? He is hopelessly floundering in the sea of mystery, out of which he seems helpless to steer his intellectual barque.

In considering the dynamic force of drugs I shall begin by taking such a drug as strychnin. Its action is mainly on the nervous system, the brain, spinal cord and nerves. Its therapeutical effects on diseased bodies may be simply stated as being of a tonic nature on the nervous system primarily, and having also, by its action on the nervous system, a stimulating and tonic effect on all muscular tissues. We can see at a

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glance how crude, imperfect and unscientific is our knowledge of this drug. We say that strychnin acts on the nervous system in the same off-hand manner that the painter would advise the painting of a house in order to preserve its timbers from destruction by the elements, but the advantage is with the painter, because we readily grasp the significance and wisdom of his advice, but with the action of strychnin is there any one of us who can give an intellectual explanation of the "modus operandi" of a dose of strychnin on the brain and spinal cord and the nervous system generally? These same remarks are applicable to the action of all those drugs that have a special effect on the nervous system; all drugs included in the groups, analgesic, narcotic and hypnotic; drugs which we daily prescribe for our patients. We employ these remedies empirically and have not the slightest knowledge how they produce their effects, nor is this surprising, for the scientific world has hitherto been searching in the wrong direction; nor will it ever be possible to explain the effects of these drugs except on strongly speculative hypotheses.

We attribute extraordinary effects to these drugs and consider and believe that they actually possess some subtle virtue to bring about the desired effects; in other words, that they originate, *de novo,* certain physiologic alterations and that these alterations are the causes whereby these drugs possess the properties attributed to them. Thus, we say that we prescribe morphin, chloral hydrate, bromid of potash, sulfonal, etc., and that we procure sleep for our patients; or that we give strychnin, phosphorus, etc., and that we bring about nervous and muscular tonicity. This is doubtless true in so far as effects and results go.

Are we able to determine how these results are brought about? We certainly are not. We know that nervous and muscular tonicity and sleep are natural conditions in a healthy body and require neither strychnin nor hypnotics. The question is, Where did this natural tonicity of nerve and muscle and this natural tendency to sleep arise? Is it inherent in the body? It appears natural for all animal nature to sleep; that is to say, to go into a temporary state of suspended consciousness and animation. We give an opiate to produce sleep; that is, we try to bring about artificially what ought to be a natural condition. May not sleep be something that lies outside of the body altogether, a condition like light and heat, and that the body only harmonizes with this somnambulistic condition when the brain cells and their electrons are in certain corelations to it? The truth will ultimately be found, I believe, in considering all force as external to man; that man in himself, or any living thing, for that matter, has no force except that which he can absorb from those numberless and mysterious forces that surround him, forces that have through the long cycle of creation been responsible for bringing him into existence.

I consider man but a microcosm of the universe; that is to say, that he is in himself but a minute counterpart of the whole immensity of the universe and of all forces that exist therein; in other words, there is no force in the whole immensity of Nature that does not find its counterpart in the microcosm we call man. Man is the highest conscious form of

once unconscious matter, although his apothegm is somewhat misleading, as there is no matter in Nature that is absolutely unconscious; consciousness is, therefore, only a relative term; more correctly can we say that, as far as our own consciousness goes, man appears to be the *ne plus ultra* of the whole immensity and of all the forces of the universe. Man being, therefore, a microcosm of the universe, he is acted on and influenced by all forces and, more than this, by all conditions of the universe. We might with truth say that man is but the plaything of all the forces of Nature and that he possesses nothing that he does not borrow, directly or indirectly, from Nature. He is great Nature's pet child. The nourishment of his body is directly dependent on chemical laws. His mental attainments are also dependent on forces existing outside of himself. Although he appears to be endowed with a certain autonomy, his strength as well as his sleep are borrowed from Nature's great workshop. His very appetites and passions are also borrowed from the same source. There is nothing that really exists within himself. He is but the machine exquisitely fashioned so as to attract and condense Nature's forces. He is capable, in a limited sense, of storing some of these forces. His five senses are simply media through which many of the forces of Nature are made to reach the machine. They also play a superlative part in preserving and educating this machine for the play of those eternal forces; his senses are, as it were, the points of contact of his machine with those forces.

Let me further elucidate. Let us take a good stout horse which will draw many miles a wagonload surpassing him many times in weight. Whence does the strength come to the horse? From his muscles, is the ready answer, but sever the nerves that control those muscles, thus destroying communication between muscles and brain, we see at once that the muscles become limp and useless. In other words, the horse has lost his strength, hence it can not be the muscles of the horse that have power and strength, the muscles are but store houses for another power and nerves are but the channels along which that power is transmitted from the brain to muscle. Let us next find the specific centers in the horse's brain that control the power of locomotion. These centers we know are small and circumscribed. We leave the nerves intact and destroy these centers and the horse immediately becomes powerless, he becomes paralyzed; from this it would appear that these centers in the brain supply the power in the horse's muscles. Is this so? Does it not seem somewhat unreasonable to suppose that these small foci of brain matter create such an immense force from within? Is it not more reasonable to consider these brain foci as simply media for condensing external forces which are passed on to the muscles through the channels of the nerves? The larger the muscle, the finer its texture, the greater store house does it become and the greater force it can exert.

One thing we know, and that is that when nerve interruption takes place between muscle and brain the loss of muscular power is instantaneous, showing that force is continually being condensed by these brain centers and is continually supplied to the muscles. Man, as well as

animal and vegetable life, must be considered not only as a product, but as an integral part of the whole immensity of the universe, and that Nature's pulse beats in unison throughout the whole. Life is but the tangible expression of the forces of Nature. A mistake has been made hitherto by considering life as but the product of the forces of Nature. I shall use the word "Nature" hereafter, as implying the whole immensity of matter, of force and of the condition of the universe, a term more easily expressed and more readily understood. The processes of conception, gestation, birth, life and death are but manifestations of Nature's forces in a differentiated form. When man dies, these differentiated forces pass on to join in that totality of the eternal economy of the universe, the design of which is unknown to us. Nothing is, therefore, lost to the totality of these forces by the death of the living entity. All that takes place is that the concentration, differentiation, and condensation of Nature's forces cease at a given point.

Man is, as far as we know, the highest and most perfect machine equipped for the differentiation, condensation, and storage of Nature's forces. We will pass on now to consider the effects of narcotics and hypnotics on this human machine of ours. We say roughly that opium brings about a congestion of the brain and sleep is thus induced, but how crude is this explanation; let us further ask why should a determination of blood to the brain induce sleep,—the answer we can not tell, all that we know is that it does so. What is sleep? Roughly answered, sleep is Nature's forces in repose for the sake of repair. May not sleep be something in Nature counterparting itself, if I may be permitted to coin such an expression, in its microcosm man? In other words is sleep the counterpart in man of something already existing in Nature?

Let us consider a moment. "The mass of all visible stars in the greatest telescope is so small in comparison with the sum total of matter in existence that it may be almost neglected. The greatest bulk of matter does not emit light. The universe as a whole is almost dead. Photographs of the entire celestial vault reveal about one hundred millions of stars or suns. Mathematicians tell us that there is enough matter in existence, which is apparently dead, to make thirty-two thousand millions of suns like ours. So that of the immense quantity of matter existing, only a minute fraction of it is visible, as stars and heavenly bodies. The bulk of matter is quiescent and dead. It may be possible that there are billions of exhausted suns and moons and planets wandering in the waste spaces of space."

If this immense proportion of the universe is dead and quiescent, this quiescent part must have its counterpart in the microcosm man, as well as those parts which are not quiescent, otherwise, man can not be justly esteemed to be a true microcosm of the universe, hence, this quiescent part is represented or counterparted in man as sleep.

All that hynoptics do, therefore, is to place the atoms that go to make up the brain cells of certain specific areas of the brain, in such relationship or juxtaposition to the quiescent parts or conditions in Nature, so that the microcosm becomes harmonized with this bulk of quiescent

matter, and that which we call sleep is induced or produced. Consider for a moment those myriads of atoms, all so intelligently arranged and see if we can not reconcile their relationship to the external forces of Nature, by finding an analogy in the human economy.

Take the spermatozoa, virile living bodies of one two-thousand-five-hundredths of an inch in diameter, each one a perfect microcosm of the male himself, each one with its millions upon millions of atoms so infinitely small as to be incomprehensible to the human mind and yet so intelligently arranged and accurately adjusted and with such wonderful potentialities that it will produce when placed under suitable environments and conditions, a striking counterpart of the human being from which it sprang. If this be true of spermatozoa, which nobody will be disposed to deny, why should not the cells of the gray matter of the brain with their myriads of atoms, possess likewise almost infinite properties and potentialities and have the power of so arranging their atoms as to form an intimate relationship with the forces of Nature?

Thus, there may exist in health a normal relationship existing between the brain cell atoms and these forces. The normal function of these brain cell atoms may be considered to be the condensing of these external forces, thus contributing to the life and well being of the complete microcosm man. In disease this subtle relationship and balance is disturbed and all that drugs do is to restore this fine balance and relationship, therefore there must exist in the drug itself some inscrutable and hidden force which, when coming in contact with brain cell atoms, have the property of so adjusting their atoms with the forces of Nature, as to produce a condensation of those forces.

"The new theory of matter now being exploited may be called the 'Astronomy of Atoms,' so that what has been regarded as a brain cell is not merely composed of millions of atoms, but these atoms are composed each one in its turn of myriads of infinitely smaller things called electrons, which revolve around one another in the perimeter of an atom, in paths resembling the orbit of the earth and other planets that go to make up the solar system. And that instead of being packed closely the revolving electrons have in proportion as wide a latitude for movement in an atom as there is free space existing between Mars, Jupiter, Saturn, etc.

"The manner in which the electrons which constitute an atom revolve about one another resembles the manner in which the planets travel in their concentric and goes to show that the principles perfected by Newton, Laplace, etc., to account for the motions of the heavenly bodies, may explain also the motions of those infinitesimal electrons of which atoms are composed." Thus a brain cell may be considered to be a counterpart of the universe, and a brain cell atom a counterpart of the solar system, and electrons a counterpart of the planets.

Thus we can comprehend the subtle relationship existing between mind and matter. Thus there is a frontier established in those infinitesimal atomic subdivisions, a frontier where mind and matter meet or in other words a frontier where the eternal forces of Nature are brought into sympathy with the microcosm man.

I have only alluded to those drugs which are considered as having a special action on the nervous system. Many drugs have a mere chemical or a mere mechanical action, like some purgatives, and some of the mineral and vegetable astringents. Why should the taking of a bitter tonic like gentian increase the appetite for food? We can readily explain why taking salt induces thirst, this effect is produced solely through physical and chemical causes.

Why should ammonia and brandy stimulate the heart to action? But the effects of these drugs may be explainable upon the brain cell atomic relationship hypothesis. Some drugs are blood foods, like iron. So we may go through the whole pharmacopeia and recount the effects of all the different drugs upon the human system, some we can explain, as we have said mechanically, some chemically, and some upon the brain cell atomic relationship theory just laid down, and some we can not explain at all. May not drugs that aid digestion, assimilation, nutrition and elimination restore altered brain cell relationship and this being restored, normal conditions of the body are restored?

We can readily understand that when deleterious matter is circulated in the blood, deleterious matter derived from the results of impaired digestion, or impaired assimilation, or impaired elimination, the deleterious matter, for example, seen in cases of renal insufficiency, that these deleterious products have an injurious action upon the brain cell atoms and their electrons and alter their fixed relationship to the external forces of Nature, thus, further, morbid conditions arise as a result of this altered relationship. The spinal cord, the nervous system, including the sympathetic nervous system, are but extensions and modifications of brain matter, but the brain cell atoms and their electrons to a superlative degree govern and control the relationship existing between the microcosm man and the forces of Nature. We know that when the continuity of a nerve is completely destroyed the distal parts supplied by that nerve lose both sensation and mobility, hence we draw the inference that the relationship of nerve cell atoms and their electrons with the forces of Nature must be through the medium of brain cell atoms; nerve cell atoms seem apparently unable to act independently and their normal function appears to depend on the integrity of their connection with the brain cell atoms.

We are thus lead to the consideration of pain, its causes and why it is that there are certain drugs which will relieve pain either locally or generally. Let us go back a little and dwell upon the relationship existing between the microcosm man and his five senses, sight, hearing, smell, taste and feeling, which senses, as we have said, are but the points of contact of the microcosm man with the eternal forces of the universe, but we must not forget that the myriads of atoms and their electrons that enter into the composition of the brain cells are the chief and the supreme points of contact of the microcosm with these forces.

Pain is mainly connected with one of these senses, namely, that of touch or feeling. Pain may be described as a partial interruption in the continuity of nerve and brain matter. The forces which are constantly being condensed and transmitted by the brain cell atoms and their elec-

trons along the nerve channels to all parts of the body, when meeting with an interruption at any stated point, owing to the loss of continuity of nerve substance, there takes place at that specific point, a sudden effort on the part of these forces to escape, and this violent escaping of force we call pain.

Thus when an analgesic or pain-easing drug is given, the drug appears to possess the property of either restoring to some extent the disturbed relationship of nerve cell atoms and their electrons at the point of impairment, or it may act primarily on the brain cell atoms and their electrons and lessen the condensation of force, and thus diminish the volume of force transmitted along the nerve channels, so that if there is less force to escape there is less pain. Local anesthesia, produced by the application of certain drugs like cocain to specified localities, may be explained upon the hypothesis that these drugs possess a certain property of so altering enrve cell and brain cell atomic relationship that their continuity is absolutely destroyed for the time being.

General anesthesia, by the inhalation of ether or chloroform, may be explained on the hypothesis, that these drugs when brought in contact with brain cell atoms and their electrons possess the peculiar property of completely arresting the condensation of force by these atoms. The skin being abundantly supplied with nerve endings is extremely sensitive to thermal and other changes. The sense of touch is one of our most delicate senses. Any loss of continuity of skin must necessarily include a loss of continuity of nerve cell atoms, and hence, an interruption of the transmission of force condensed by the brain cell atoms and their electrons and the effort of that force to escape at the point of impairment, results in pain.

Let us pass on to those drugs known to us by the name aphrodisiac. There are quite a few of these. How do they act? We are taught that the sexual center is seated in the lumbar region of the spinal cord. Do these drugs actually generate sexual power? Or is their primary action upon the brain cell atoms? causing the atoms and their electrons to condense the external forces, which forces are passed along the spinal cord and are stored at certain centers there. I am strongly inclined to this last theory, that the sexual force, like all other forces, lies outside the body and that it is a force that is condensed by the brain cell atoms and their electrons, differentiated by them and passed on to the spinal cord to be there stored in centers. It is a force upon which depends the perpetuation of all life upon the earth, paradoxically, it may be called a force which, while binding the living to the dead, it at the same time, marks the point of cleavage from dead and living.

It is a force that is universal in all living matter, animal and vegetable alike. In the matter of plants there must exist within them certain cell atoms that condense and differentiate the eternal forces, storing them in the ovule and pollen and finally in the seed in much the same way that the brain cell atoms and their electrons of the human male and female condense and differentiate this force, storing it in the male as spermatozoa and in the female as ova. How subtle, indeed, must be the processes of condensation, differentiation, and storage of these forces, we can readily

see when we consider that the spermatozoa are but microcosma of the whole being of man, and the ova are but microcosms of the whole being of woman. The same remarks apply to plants and their seeds.

It is interesting to note that in that form of life which has no locomotion, or very little of it, such as plant life and the lower animal life, that sexual contact is for the most part involuntary, depending upon the movements of the air, of insects, birds and even water and other accidental causes. Some lower forms of animal life are bisexual, but with the higher forms where locomotion is extended, the sexual contact becomes voluntary and controllable and more highly organized and complex. With birds and fishes, which have a wide area of locomotion, the sexual instinct appears to be more pronounced than with those animals that have but a limited area.

With man, who has the widest area of locomotion and who is so constituted as to be able to move and live anywhere and everywhere on the face of the globe, in the Arctic as well as the Equatorial regions, the sexual predisposition is the strongest of all, but far more complex and better under control than in all other species of animal life. This leads us to consider what we term fixed habits of mind. But fixed habits of mind are the product of forces acting along certain well-defined lines; these forces, by frequent repetition, cause the brain cell atoms and their electrons to assume stable relationships; such a force may be termed hereditary predisposition, dispositions already existing in or capable of being produced from those microcosms, the spermatozoa and the ova; these forces are fundamental with life and result in the power of the living organism to become conscious of its environment.

This continued consciousness of environment produces in turn fixed habits of mind. There is nothing that actually exists *de novo* in the microcosm man except these fundamental tendencies derived from the spermatozoa and the ova, all that he is capable of is to condense, differentiate and store within himself the forces of Nature, through the instrumentality of his brain cell atoms and their electrons, powerfully aided by his five senses. Let us take the memory of words and draw a rough analogy between the brain cell atoms of that area of his brain, set apart, as it were, for the memory of words, and an ordinary kaleidoscope. By giving the kaleidoscope a turn a beautiful design is shown, caused by the placing of the pieces of glass in the instrument in certain positions, mathematically correct in every detail. Thus when the atoms and their electrons of a brain cell in the area of the memory of words is influenced by a certain sound, say, for instance, the French salutation, "Comment vous portez," these atoms assume a definite form or shape, as the expression is repeated over and over again, a certain stable relationship takes place which may never again in this life be disturbed and the remembrance of the expression never lost, the sound of the expression is entirely outside of the microcosm, like all other forces of Nature.

We have all seen the experiment made with glass or metallic discs of various sizes and thicknesses, so made, that when the bow of a violin is drawn across each one of them, each gives forth a different and distinct

musical sound. Let us take some fine sand and place some on each of these discs and draw the bow again, now what do we see? On each disc is produced a figure or design mathematically correct in every detail, no two figures being alike; this analogy may aptly be applied to the effect of sound upon the myriads of atoms and their electrons of those cells that go to make up the area assigned to the memory of words and the differentiation of sounds. Thus sounds and languages are learned and remembered.

What is true of one area of the brain is true of all the other areas. The senses of sight, smell, taste, feeling, will likewise produce stable relations of brain cell atoms and their electrons. The brain cell atoms, therefore, have the power of acquiring stable relationships when influenced by the various senses we possess. In other words, the senses are the stimuli by which brain cell atoms and their electrons condense those forces that act upon the microcosm and these atoms finally assume a permanency of position, which permanency enables the microcosm to become conscious of its environments.

Thus, habits of mind, or to be more explicit, the education of brain cell atoms can be acquired. A drug, say opium, acting repeatedly upon certain brain cell atoms and their electrons, brings about certain stable relations of these atoms, the acquisition of which enables these atoms and their electrons to condense and differentiate the forces of nature, which differentiated forces produce on the microcosm certain definite effects. The opium does not of itself produce these effects upon the microcosm, all the opium does is to bring about changed conditions of certain brain cell atoms and their electrons, which changed conditions produce a condensation and differentiation of the external forces, and it is the effect of this differentiated force, thus produced, that exhibits itself upon the human microcosm, which exhibition of effect we attribute to the opium.

Arguing from this, we can see the value of the proper training of the brain cell, in other words, the brain cell atoms can be educated, thus habits are formed—good or bad.

I do not wish to pass into a polemical discussion, yet it would be pertinent at this juncture to say that I believe in the universality of a spirit of good pervading and influencing all the eternal forces of the universe, and that this spirit is counterparted in the microcosm man, giving man an entity above all other created things and developing within him a conscience and a free will, and by the exercise of these he can so educate the brain cell atoms as to bring the whole microcosm in harmony with the beneficent purposes of this universal spirit of good.

Further, I might add, that if we consider all force, which includes the sexual, as primarily external to man, it is not inconsistent with the logic of my contentions to say that when Nature, through travail, labor and distress, evolved an immaculate being, it was quite within the bounds of possibility for the brain cell atoms and their electrons of this immaculate being to have so condensed within herself such necessary portions of the external forces of Nature, and also to have condensed within herself the universal spirit of good, as to reproduce from her own immaculate body a

being combining within himself all the elements that go to make up the microcosm man, and all the essentials of the external and eternal forces of the universe existing outside the microcosm.

To carry this thought a little farther. Granting, as we must, that the eternal forces, acting on chaos, have been able, through a long cycle of time, to evolve the microcosm man, and through man those microcosm of himself the spermatozoa, it is not beyond reason to infer that those same forces, acting upon and through an immaculate microcosm, that is to say, a microcosm of the very highest development, have been able to evolve a being having both finite and infinite attributes. Thus, it is not very difficult to concede that such a being, condensing within a human frame infinite powers and forces, did perform by the infinitude of those powers and forces such wonders attributed to him, wonders only owing to the limitations of human understanding.

It would not be unprofitable to consider, for a brief moment, the historical and the scientific significance of the spirituality of that period when Christ was born. The Roman world had borrowed and taken to itself the gods of the Greeks, though greatly debasing them by placing them on lower ideals of Diety. These Romans had conquered all the tribes bordering on the Mediterrenean; these tribes had, after their conquest, gradually abandoned their own religion and their own gods, and had accepted the religion and gods of the Romans; they became, in fact, integral parts of the Roman empire; Greece, who had borrowed her mythology from the Egyptians, but had beautified and embelished it by endowing their gods with all manner of romantic and picturesque human attributes, thus lifting their gods far higher in the scale of diety than that hitherto achieved by man, excepting the Hebrew. The Greeks had also lost faith in their Gods for a long time past, and their whole system of faith was shaken to its foundation. Socrates, the great teacher and philosopher, was compelled to swallow hemlock, because he expressed his disbelief in the gods of his people. The intellectual mind of Greece revolted against their absurd, although beautiful mythology, and in the course of time the people followed their philosophers. At the birth of Christ the religion of Greece was hopelessly foundering. The Egyptians had sunk to the grossest and vilest form of idolatry, such as the worship of cats and dogs, and all the far East was covered under a dense cloud of heathenism. Within the small compass of Judea, in the land of Palestine, was a remnant of the once powerful nation of the Hebrews, who had been for a long period held in bondage, but had a few generations previously returned to their native land. This remnant of Israel alone had, through these years of captivity in Babylon, and after their return to Palestine, held steadfast in the belief of the one true and only Creator.

The universality of the spirit of good was through the power of natural selection, strongly attracted to the tribes of Judea in the land of Canaan. Every Hebrew maiden and matron lived in the fervent hope that perhaps she might be the one chosen to be the mother of the Messiah. This lead to an exalted and lofty chastity among the women of Judea. It was during this age of exalted ideals of motherhood and God, ideals

which were entertained by the men of the nation as well, producing within them a high and lofty spiritual sense, which was not in any way diminished by the Roman conquest, and it was in the intensity of this circumscribed spiritual atmosphere that the immaculate being was born, destined to become the mother of Christ.

A wonderful galaxy of spiritual-minded men lived during Christ's life and followed closely after him.. This intensity of spiritual feeling has never been duplicated and may never be again for aught we know. Those of us who are believers in the theory of evolution and natural selection, can, with interest, trace the spiritual evolution of the Jews all through their remarkable history, their captivity in Babylon, their return again to Judea, and their deep spiritual development at the time Christ was born. To the query, "Why has an immaculate conception occurred only once in the history of man?" the simple, scientific answer to that is, "Nature never duplicates herself." The long epoch in the history of man that evolved the immaculate virgin can never be repeated. There are no parallels in history, each epoch is *sui generis*. There may exist similarities, but never parallels.

But to proceed. By the brain cell atoms of man, that is by his thoughts, the greatest depths of the universe can be fathomed, his power of appreciating, not necessarily comprehending, space is infinite; space in its widest diffusion, as well as its minutest subdivision; man can appreciate the widest ranges of stars in the firmament and also the infinite smallness of those atoms that go to make up a brain cell or a spermatozoon.

Infinite space, as well as infinite subdivision, may be said to be counterparted in man, or in other words, infinite space and infinite subdivision find, as it were, a meeting place in him. Is thought a force that has its incipiency exterior to the microcosm? By thought we mean consciousness of knowledge, or of what is. All knowledge is eternal, the same yesterday, to-day and forever. Knowledge may be likened to an ocean, and the brain cell atom and its electrons to a sponge floating in this ocean. The brain cell atom absorbs knowledge in much the same manner that the sponge absorbs water. Brain cell atoms of some are more capable of absorbing knowledge than others, much in the same way that some sponges are more porous than others. Brain cell atoms and their electrons can be made to absorb more knowledge by preparation, much in the same way that a sponge can be made more porous by being put through certain processes of preparation.

When permanency of groups of brain cell atoms and their electrons is brought about and brain cell atomic activity is almost confined to these definite areas, insanity may result. Insanity may be defined as an irregular and disorderly activity of brain cell atoms and their electrons, producing perverted impressions by the senses upon these atoms, and these perverted impressions may, in their turn, cause further irregular and disorderly activities of other brain cell atoms, thus, a species of action and reaction is brought about which may finally result in the complete destruction of whole areas of brain cell atoms, and hopeless insanity ensue.

The intelligent training of the brain cell atoms and their electrons by the senses, is necessary for a healthy balance between these atoms and the external forces of nature and with that knowledge which envelops the whole universe.

Life has been scientifically defined as a consciousness of environment, the greater the consciousness the higher the form of life. It is plainly to be seen that well-educated brain cell atoms tend to extend this consciousness of environment, and, therefore, to the higher development of the microcosm, in other words lead to a higher plane of life.

But there is even a higher form of consciousness than the mere consciousness of environment. There is the consciousness of truth, of honor, of justice, of love, a form of consciousness far more subtle than the mere consciousness of environment. It is, altogether, a higher form of consciousness. While not attempting in any way to dip into metaphysical controversy, yet, on a purely material basis, we may argue that brain cell atoms and their electrons have been endowed with the property of condensing forces and knowledge from the envelope of force and knowledge that surrounds the microcosm. It is only logic to suppose that the brain cell of the microcosm man is sufficiently developed to absorb the knowledge of God, which is truth, honor, justice, love, etc., which are parts of this envelope of knowledge that surrounds man.

Chemical forces may be rightly considered as another of the many manifestations of the external and eternal forces of Nature. Here is a vast field for speculation and clearly within the range of medical science. In considering man as a microcosm of the universe, we assert that all the forces in the universe have taken some part in his production at some time, hence, all chemical compounds, mineral and vegetable alike, must, to some extent, affect the microcosm, which has been established by these chemical laws. Some chemical compounds affect him beneficially and others detrimentally. These effects are governed by some law, and by some principle laid down during the travail, I may say, of the forces of Nature in their efforts toward producing man.

These effects of drugs we call the dynamic force, a force which has its incipiency in the impenetrable vista of the past, a force, nevertheless, that is closely woven in the warp and woof of the inexorable workings of Nature's laws towards the evolution of the microcosm man on this earth. That is to say, the chemical combinations of a drug having played their part in the aeons of ages gone by, in developing the complete microcosm, these chemical combinations when given in the form of a drug to man, strive once more to enact their ancient rôle and thus produce in him certain definite results, results that may be altogether dissimilar to their original effects, when assisting Nature in her labor of evolving man. This dynamic force, is, as it were, an atavistic force.

The complexity of the construction of the microcosm presupposes the complexity of the forces of Nature; some of these forces we think we understand, but of the great bulk of them we know nothing. Take maternity for example, that inexplicable force that is evolved in the gesta-

tion of a being, either brute or human, there are undoubtedly unknown forces upon which maternity depends and draws. More especially during the period of gestation, how often is it that a delicate woman, worn with much grief, sorrow, pain and work, will bring forward a virile perfect offspring; and have we not often wondered at an apparently half-starved cat or dog bringing forth a numerous group of healthy progeny? How comes this about? May it not be possible in gestation that there is a certain brain cell relationship established which leads to a condensation of certain forces of Nature, which forces may be powerful factors in assisting Nature toward the fulfillment of maternity—that supreme act of hers? May not hypnotism be a force in Nature unknown to us, and explainable as an indefinite power possessed by some individuals to condense certain forces of Nature, and who further possess the power to pass these forces on to other minds, or speaking more accurately, to other brain cell atoms. The passage, as it were, of force from the brain cell atoms of one to the brain cell atoms of another, producing in the subject a similar attitude that exists in the operator. The stability of these brain cell atoms thus produced causes all other parts of the brain to remain quiescent, and the renewed activity of these other parts is dependent upon the destruction of this stability first established. As long as this stability continues the subject is under control, that is what we call hypnotism.

In dealing with these ideas, theories, or speculations of the activity of brain cell atoms in their relationship to the external forces and harmonizing these theories with the microcosmic theory of man, there is still a further thought that is capable of being extensively exploited, and that thought may be placed in the form of a query. May not the activity of brain cell atoms produce a sort of compound in a region of science yet unknown; some science probably analogous to chemistry, or, perhaps, closely related to it, compounds that may be further acted upon by one or many of the external forces, thereby forming or breaking up, or differentiating into other compounds? Thus the various phases of mental activity may be explained. When we consider the infinite number and the infinite activities of the brain cell atoms and their electrons and the infinite number of forces that act upon those cell atoms we can readily realize the infinite diversification of the thought and activities of the mind of man.

May not the will be established by some subtle relationship existing between those fundamental tendencies and hereditary predispositions derived from those potentialities of the spermatozoa and ova and these brain cell atoms and their electrons, relationships that may be further influenced by the action of the senses? May not decay and death be attributed to the gradual loss of power by the brain cell atoms and their electrons to condense the forces of Nature? Thus, the body of the microcosm becomes starved, as it were, of force, and decay naturally supervenes, as lessened force supply means lessened cell formation, and lessened cell formation implies decay, disease and death.

May not what we call instinct in birds and animals and fishes, seen in a limited extent in plants also, and intuition in man, be attributed to the activities of brain cell atoms and their electrons in that frontier already described, a frontier of infinite atomic subdivision, a frontier where knowledge and force are being constantly absorbed, from those eternal envelopes of knowledge and force that surround the universe and all things therein by these brain cell atoms and their electrons, much in the same manner that a placental villus will absorb oxygen and nutriment from the maternal blood in which it floats, nutriment and oxygen destined to support the growth and life of the fetus, and further that the stimulus given these atoms to absorb this knowledge and force is through the medium of the senses?

May we not, with some justice, be accused of incontinently using the expression "Dynamic Force of Drugs," to cover up a vast amount of ignorance, or to bolster up the pretense and extravagant claims of the extraordinary efficacies of drugs when administered in infinitesimal quantities?

THE SOURCES OF INFECTIOUS AGENTS AND THE WAYS AND MEANS OF INFECTION.

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Prevention of infectious diseases rests on knowledge of their mode of spreading and the more accurate and complete this knowledge the more effective becomes our prevention. At the present time the common, all-important source of the microbes that cause the human infectious diseases is the sick man or animal from which the microbe may pass to susceptible individuals and start new infections. This transfer of the infectious microbe may be direct or indirect. Indirect transfer may take place through the air, water, milk and other substances; through even healthy human beings, and through animals, particularly various insects. Only a few pathogenic germs lead a regular saprophytic existence. The bacillus of tetanus, of botulismus and of emphysematous gangrene (the gas bacillus of Welch) are inhabitants of the intestinal contents of the larger animals and man and occur in many soils upon which manure is deposited. The tetanus bacillus, however, has hardly any invasive powers, its action being essentially toxic. The gas bacillus and other anaërobic bacteria with pathogenic powers are also essentially saprophytic in their habits and perpetuate themselves without difficulty outside the body.

Aerial Infection.—When infectious micro-organisms reach the external world in the secretions and discharges from the sick, they may be deposited on the ground or floor, on clothing, and on articles of various kinds. So long as drying is not complete, bacteria are not detached by ordinary air currents and direct contact is now practically the only way in which disease may be communicated. In the home, the school room, public conveyances, etc., there is good opportunity for communication of

disease in this manner. There is abundant evidence that the acute exanthematous diseases, wound infections, diphtheria, typhoid fever and other diseases may be carried by infected clothing and other articles. In most of these cases it concerns the conservation of microbes in virulent form, rather than actual multiplication; cholera and typhoid bacilli may multiply, perhaps, in fecal masses deposited on clothing.

Until a few years ago aerial infection was regarded universally as infection by dust, carrying dried bacteria. Cornet called our notice to the dangers of dried tuberculous sputum. The idea that inhalation of dried sputum is the essential means of transmitting tuberculosis has a strong hold. In 1897, Flügge, in Breslau, began a series of investigations of the air as the carrier of infection, the results of which have shown that air may convey bacteria not only when dry, as dust, but also in fine bubbles or droplets of sputum or moisture. Of these two forms the second is probably the more important in spreading disease in general.

Dust Infection.—True dust infection requires that the organism in question withstands drying in the air to the extent that it can be whirled about and carried for some distance by the air currents in our houses and other places. Dry bacteria of this kind constitute the real danger in dust infection as now understood. Of course, very strong currents, mechanical disturbances of accumulated matter, "dry dusting," violent shaking and rubbing of handkerchiefs and other contaminated articles may set in motion for a time larger portions containing infectious materials, but these would rapidly settle down, when, it is true, they may cause infection from direct contact, whereas it has been shown that smaller particles of completely dried material may remain suspended for three or four hours. Herein lies one of the chief elements of danger of this mode of infection.

Pathogenic bacteria have been divided with reference to their power to communicate disease when dry as follows (Gotschlich): 1. Bacteria that are not viable in air-dried dust and which consequently can not disseminate disease in dust: cholera vibrio, gonococcus, pest and influenza bacillus. The recent work of Wood[1] indicates that the pneumococcus belongs in this group. 2. Bacteria that withstand drying and may convey disease when carried by such air currents as occur in ordinary houses (1 to 4 mm. per second); meningococcus, pyogenic cocci, bacillus pyocyaneus, tubercle bacillus, tetanus bacillus and anthrax spores. 3. Bacteria that withstand drying, but are disseminated only by such strong currents as rarely occur in houses; diphtheria bacillus, typhoid bacillus. It must be added that material carrying smallpox may be disseminated in the air. English observers lay great stress on the "aerial convection" of smallpox.[2] In the case of measles and scarlet fever the danger of aerial infection is confined to within a few feet from the patient.

Droplet Infection.—Flügge and his co-workers have demonstrated that, in talking, coughing or sneezing, numerous germ-laden bubbles of mucus and saliva pass out into the air, where they may float about for a

1. Jour. Exp. Med., 1905, vii, 592.
2. See Welch and Shamberg, Contagious Diseases, Philadelphia, 1905.

time. The distance to which the droplets, often quite invisible to the naked eye, may pass depends on the force with which they are expelled, on the nature of the air currents, as well as on the size of the droplets. It has been found that, after rinsing the mouth with a solution of *B. prodigiosus,* droplets containing bacilli may be carried as far as 12.4 meters (Koeniger). On account of the viscid character of their saliva, tuberculous patients rarely throw out droplets farther than 1.5 meters, and this is the limit within which association with coughing consumptives must be regarded as positively dangerous. Laschtschenko and Heyman have shown that tuberculous patients frequently expel in this way droplets laden with virulent bacilli that, on inhalation by guinea-pigs, cause fatal tuberculosis. In connection with droplet infection, it must be noted that relatively strong patients, who walk about, may be just as dangerous as the weak and bedridden, and even more so. On account of the viscid character of tuberculous sputum, the droplets on drying adhere firmly and it seems that mechanical influences are necessary in order to loosen particles from dry drops. Tubercle bacilli may remain alive for 18 days in drops that dry in the dark and for three days in the light.

Numerous pathogenic germs may be disseminated by droplets or bubbles of mucus and saliva, among them most of those that die on drying. It is likely that influenza, pneumonia, diphtheria, whooping cough, measles, scarlet fever and smallpox may be communicated in this way, and perhaps also epidemic meningitis. Mendez de Leon and Alice Hamilton[3] have both shown recently that streptococci are expelled to various distances in talking, coughing and even in rapid breathing and undoubtedly operative infections of somewhat obscure origin may be caused in this way. It is also probable that in hospital wards, especially virulent streptococci and pneumococci may be communicated through droplet infection. Schaeffer found that patients with leprous lesions in the mouth and respiratory tract may expel large numbers of lepra bacilli in droplets of mucus.

Aerial infection of whatever character, whether dust or droplet, is most dangerous by far in closed rooms, railway cars, shops. In the open air it is less dangerous because of the unlimited space and the action of sunshine. Cases have been reported, however, of typhoid fever which appeared to develop from dissemination of dust-carrying typhoid bacilli deposited on the ground in typhoid feces and urine.

Water-borne Infection.—Water plays an essential rôle in the dissemination of typhoid fever, cholera, bacillary and amœbic dysentery. It is only exceptionally, however, that the bacteria in question find such conditions in the water in which they are deposited with discharges from the sick that actual bacterial multiplication takes place. In India, the temperature and amount of vegetable and other materials in the waters of the Ganges enable the cholera spirilla to multiply. In most waters in temperate climates, the bacteria are able to maintain life only for a comparatively short time. It is said, largely as the result of laboratory ex-

3. Jour. Am. Med. Assn., 1905, xliv, p. 1108.

periments, that cholera germs will remain alive in water under "natural conditions" for three months and typhoid bacilli for four weeks. In the experiments of Jordan, Russell and Zeit,[4] in which typhoid bacilli were exposed to canal and river waters in sacks permeable to dissolved substances, the bacilli perished, as a rule, within three to four days. Theoretically, it may be possible that resistant bacterial cells may withstand for a longer period the especially hostile influences of water. Frost,[5] on reinvestigating the antagonism of bacteria to typhoid bacilli, found antagonistic bacteria to be distributed widely in nature, being present in various soils and waters.

The Soil and Infection.—According to Pettenkoffer's theory, the subsoil played an essential part in the dissemination of infectious diseases, but this theory has been abandoned because it has been shown conclusively that pathogenic germs do not reach and can not live in the deeper layers of the soil which normally are sterile. Experimentally, it has been found that typhoid and cholera bacteria may retain their viability for some time when deposited in the superficial layers of the soil. Rullmann[6] found that typhoid bacilli implanted in sterile sand remained alive at the end of eighteen months when the material had dried completely. Levy and Kayser[7] have shown that the contents of privy vaults containing typhoid bacilli may be dangerous even after the lapse of months. Anthrax bacilli may live for a long time in the ground where they pass into the spore forms which may infect susceptible animals. The superficial layers of manured soil also harbor pathogenic anaërobic organisms, of which the most important are the tetanus bacillus and the gas bacillus.

Food and Infection.—Various pathogenic bacteria may occur in foods. These bacteria may be derived from the animals supplying meat and milk. Tubercle, anthrax, glanders, paratyphoid bacilli and streptococci are among the most important organisms that may enter the body in this way. Food, especially milk, originally quite pure, is frequently contaminated on its way from the dairy to the consumer. Diphtheria bacilli and the cause of scarlet fever may be disseminated as the result of direct contamination of milk. In other cases, the contamination is more indirect, as, for instance, from the use of infected water in cleansing the utensils, etc., and in this way typhoid, cholera, and dysentery bacteria may be conveyed by milk. Milk is a peculiarly dangerous medium for conveyance of infection, because it furnishes conditions that are favorable for microbic multiplication. In recent cholera epidemics, especially in the Philippine Islands, the disease was spread through food to a larger extent than by contaminated water. Non-infective but toxicogenic saprophytes may multiply in milk, dairy products, meat and fish, which, when consumed, cause severe, often fatal, forms of acute intoxication (food poisoning, bromato-toxismus). Recently paratyphoid bacilli have been found to play an important rôle in meat poisoning, and in some of these cases the symptoms are typhoid-like; other cases are more acute. Here it appears

4. J. Infect. D., 1904, vol. i, p. 641.
5. Ibid., p. 599.
6. Centralb. f. Bakt., 1905, xxxviii, Original, p. 380.
7. Centralb. f. Bakt., 1903, xxxiv, Original, p. 489.

to concern the meat of cattle infected during life. From Malta it is reported that Malta fever is communicated by the milk of goats that have the disease.

Transmission of Infection by Animals.—Animals may cause human disease in three different ways. In the first place, animals, and especially domestic animals, may suffer from diseases that are directly or indirectly transferable to man, e. g., anthrax, tuberculosis, glanders, pest. In the second place, animals or insects, especially flies, may act as mechanical carriers of germs that are deposited by chance here and there in such a way that contact or food infection of human beings occurs. In the third place, insects, especially mosquitoes, act as intermediary hosts for pathogenic protozoa and organisms of as yet unknown nature, which here pass through developmental cycles, associated with great proliferation in the case of the malarial organisms, and acquire infectious powers, so that they cause disease when deposited again in the tissues of susceptible persons; this course of events is illustrated by malaria and yellow fever. The first discovery of an intermediary host, most likely of this kind, was made by Theobald Smith and Kilbourne, who showed that the parasite (*Pirosoma bigeminum*) of Texas fever in cattle was transmitted by a tick. Their work paved the way for the demonstration of the rôle that the mosquito for some time had been suspected of playing in malaria and also in yellow fever.

Occurrence of Pathogenic Bacteria on Healthy Human Beings and in the Internal Organs of Healthy Animals.—The skin and the mucous membranes which communicate with the external air, especially the oropharyngeal, nasal and intestinal, constantly harbor bacteria capable of causing disease under suitable conditions. The principal pathogenic bacteria present on the skin and mucous membranes of man are streptococci, staphylococci, pneumococci, diphtheria bacilli, colon and influenza bacilli and certain pathogenic anaërobes. Streptococci of undoubted pathogenic possibilities are present on the tonsils. Certain staphylococci always occur on the skin. Pneumococci occur in the saliva of a considerable percentage of healthy persons (see Sternberg, Frost and others) and also on the tonsils in conjunction with streptococci, according to Dr. Ruediger's recent studies, and with even greater frequency. Diphtheria are found in the throats of normal persons, especially in connection with outbreaks of the disease in schools, asylums, and other institutions. Tubercle bacilli have been found on the nasal lining and skin of healthy persons. In outbreaks of typhoid fever, Asiatic cholera, and dysentery, when the bacilli of these diseases are disseminated freely, it is not unusual to find the specific germs in the intestinal contents of individuals that do not suffer from infection. In the recent epidemic of cerebrospinal meningitis in New York, meningococci were isolated from the nasal mucus of about 10 per cent. of the persons that came into the most close contact with the patients. Frequently the meningococci were present in enormous numbers in such cases, while in numerous less exposed or not exposed individuals they were absent.[8] Hence the evident

8. J. Infect. Dis., 1906, Supplement 2.

necessity for early and careful isolation of patients with epidemic cerebrospinal meningitis. These instances illustrate the manner in which healthy persons may convey specific germs to those that are susceptible, i. e., present that complex of conditions necessary for the establishment of infections.

THE ROLE OF THE HOUSE FLY AND OTHER INSECTS IN THE SPREAD OF INFECTIOUS DISEASES.*

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It is practically only within the last ten years that we have begun to turn our attention to insects as important factors in the spread of infectious diseases, and yet the idea is really very old and, in this case as in so many others, modern research and experimentation are simply explaining the real nature of phenomena which were known to keen observers hundreds of years ago. Way back in the sixteenth century, a Venetian physician hazarded the statement that the plague in Venice was carried from house to house by the swarms of flies with which the city was infested. Sydenham, in the seventeenth century, observed that a summer with abundant house flies meant an autumn of sickness, and there is an old Dutch proverb to the same effect. There is a curious note, in the London *Lancet* of 1863, as to a plague of "gangrenous flies" which appeared in the neighborhood of the ancient cemetery of Montmartre in Paris. The bite of this fly caused inflammation, mortification and death within 24 hours. Eighteenth-century writers thought that anthrax was caused by the bite of insects by direct inoculation. Laplanders and Siberians have long believed this. English surgeons for more than a hundred years have been saying that flies carried cholera infection, and the Egyptians think that gnats carry ophthalmia from one person to another. In very recent years this method of infection has attracted the attention of sanitarians and bacteriologists, and we now have a large body of experiments which prove that insects may and do convey bacterial infection, some of them by ingesting the bacteria and later depositing them in the excreta, but the larger number probably acting merely as mechanical carriers, as a bee carries pollen.

That this method of infection has so long been neglected is a matter of surprise, for when one thinks for a moment of the universal distribution of insects, their access to all sorts of infectious material, the excellent adaptation of their hair-covered bodies for the carrying of such material, and the fact that our commonest foods are the best culture media for many of the pathogenic bacteria, one wonders that the subject did not force itself on the attention of the medical profession long ago. If a platinum loop in a laboratory can convey typhoid bacilli from a broth tube to a tube of milk, a fly in the ward of a hospital can perform the same service between the discharges of a typhoid patient and the glass

* Read before the Chicago Medical Society, April 4, 1906.

of milk on the table. It needs little imagination to follow the train of events, when we see ophthalmia spreading through an orphan asylum during the summer months, when the place is full of flies and the little inmates are too young to brush them away from their eyes. A visit to almost any dairy will show that the place, even when well kept, is not screened from insects; that the milk contains dead and dying flies, which have just come off the dung heaps or from the country privy vaults. The dairyman strains the flies out, but by that time the evil has been done and the culture medium inoculated. Fruit stands, bakeries, candy shops, butcher shops are all usually open to the visits of flies which have just risen from manure heaps, decaying garbage, and even dejecta deposited in alleys and vacant lots. The crawling insects—ants, cockroaches, bedbugs—are a less universal pest, yet not to be disregarded in this connection. This is not a matter of speculation and probability, but of actual demonstration. The body of facts on this subject is far too great for any but a hasty review, and I shall speak only briefly of those things which have been recorded by accurate observers.

Insects become carriers of infection by coming in contact with infectious material, which adheres to their bodies, or by eating it and later depositing the living organisms in their dejecta. The infection is conveyed directly or is deposited on food. In the case of direct infection, the insect may simply come in contact with an exposed surface or introduce the infection by biting. There are many cases recorded of anthrax following the bites of insects, usually gnats and so-called biting flies, among workers with cattle and sheep. Early in the nineteenth century a German physician wrote of two cases of malignant pustule developing at places where a fly had bitten and had been crushed. Close to the bitten persons at the time were the carcasses of animals which had died of anthrax. There are seven cases of septicemia reported following the bites of insects. There are cases of erysipelas, cases of corneal ulcer, diphtheritic conjunctivitis and even suppuration followed by fatal pyemia, all resulting from bites on the eyelids by flies, gnats and other insects. Efforts have been made to prove that bedbugs, collected in dirty rooms with sputum covered floors, can cause tuberculous infection by their bites, but these experiments are so far inconclusive. In all these cases, it is probable that the insects do not really act as intermediary hosts, but carry the germs on their bodies, and that it is through the rubbing and scratching after the bite that the germs gain entrance through the abraded skin. In many of the cases of infection by biting, the insects had been crushed on the bitten spot and thus the germs on the surface of and within the body of the insect were spread over the skin.

Direct transmission from patient to patient has been observed in Florida sore eye, an epidemic infection which is quite common there. A tiny gnat, which settles on the eyelids and often gets into the eye, is undoubtedly the means of spreading the infection. Dewèvre produced impetigo in healthy children by means of pediculi collected from a child with the disease. As to the infectious diseases with unknown etiology, we can only speak speculatively, but it is surely not beyond the range of

probability that the acute exanthematous diseases may be thus transmitted from patient to victim. But the most common mode of infection by insects in our part of the world is undoubtedly the indirect method, the infection of foodstuffs by insects which have been in contact with infected material.

A large number of experiments have been made to demonstrate this mode of infection. Cholera, typhoid fever, tuberculosis and perhaps dysentery are the diseases which are probably most often conveyed in this way. As for tuberculosis, it repeatedly has been proven that flies which have fed on tuberculous sputum contain living and virulent tubercle bacilli in their intestines and on the surface of their bodies, but the tubercle bacillus multiplies very slowly and needs special culture medium, and, as recent investigations seem to show that rather a large dose of bacilli is needed for infection to take place, it is improbable that this mode of infection is as important in tuberculosis as in cholera and typhoid fever. The bacilli of cholera, of typhoid fever and of dysentery multiply rapidly, and for them our ordinary foodstuffs are excellent culture media.

It is natural that the attention of physicians should early have been called to the agency of flies in the spread of cholera, for cholera is a disease of fly-infected countries and of the fly-infected seasons. English surgeons in India have insisted for years that flies had much to do with the spread of cholera, and this long before the discovery of the germ. In the cholera epidemic of 1849, a British ship crew in the Mediterranean noticed that when they kept far out to sea the disease died down, but on two occasions when they neared shore and were visited by swarms of flies, although nobody landed, the epidemic started up again. Flies fed on cholera cultures carry the living germs for four days in their intestines. When allowed to drink from a glass of milk they infect the milk to such an extent that after 16 hours it may contain a hundred organisms to the drop. A fly caught in the autopsy room of a Hamburg hospital during the great cholera epidemic yielded many cholera bacilli. Milk that had been exposed to flies in a jail in India during the cholera season gave colonies of cholera bacilli.

More important for us is the connection between flies and typhoid fever and probably dysentery, although here we have no data to go on. No work has as yet been done on dysentery in this regard. In the case of typhoid fever, not only flies but also crawling insects come into play. Dr. Rosa Engelmann traced a house epidemic of typhoid fever to cockroaches. A German bacteriologist, working on mouse-typhoid, observed that the cage in which he kept his infected mice became overrun with ants which also swarmed to other cages of healthy mice. As a result the sound mice all sickened with mouse-typhoid. But the common house fly is the insect chiefly to be dreaded, for it has a far wider range of activity than has any crawling insect and its presence is not regarded as a disgrace to a well-conducted household or institution, as is the presence of other insects.

The Spanish-American war of 1898, with its enormous typhoid morbidity in camps supplied with pure water and milk, first called atten-

tion in this country to the agency of flies in the spread of typhoid. Dr. H. A. Veeder, writing on this subject in the fall of 1898, said that in his opinion flies were more important agents in the spread of typhoid infection in military camps than were drinking water or milk. Drs. Reed, Vaughan and Shakespeare, in their report on the "Origin and Spread of Typhoid Fever in Military Camps During the Spanish War in 1898," state that, in many of the camps, flies were undoubtedly the most important agents in the spread of typhoid fever. "Flies alternately visited and fed on the infected fecal matter and the food in the mess tents. More than once it happened that when lime had been sprinkled over the fecal matter in the pits, flies with their feet covered with lime were seen walking over the food. Typhoid fever was much less frequent among members of messes who had their mess tents screened, than it was among those who took no such precautions. Typhoid fever gradually died out, in the fall of 1898, in the camps at Knoxville and Meade, with the disappearance of the fly, and this occurred at the time of the year, when in civil practice, typhoid fever is generally on the increase. The first pits at Knoxville contained, before the first twenty-four hours had passed after the arrival of the troops, fecal matter infected with typhoid bacillus. Flies swarmed everywhere. Instead of abating, the disease increased. The soldiers were using the same water used by the inhabitants of West Knoxville, and among the latter there was not at that time a case of typhoid fever. Certainly the disease was not disseminated through the drinking water."

Notice that the disease was at its height when the flies were most abundant and sank with their disappearance. The same experience is noted by English army surgeons during the South African war and in India. Typhoid fever is not a disease of India, it is brought in by the English and spreads through camps which have a perfectly pure water supply. The South African surgeons undertook to prove experimentally that flies can carry typhoid bacilli from fecal discharges to food. These investigators had adult and larval flies placed in a specially constructed cage in which were also placed Petri dishes containing a mixture of syrup, a fresh typhoid stool and a fresh culture of typhoid bacilli, and sometimes the whole was lightly covered with earth. After feeding on this the flies would settle on other Petri dishes which contained sterile culture medium. The typhoid colonies were recovered in every case.

Results similar to these were obtained during a study made in the fall of 1902, of the last typhoid epidemic in Chicago, in which epidemic a comparatively small area on the West Side was the region most severely affected. Within the limits of the Nineteenth ward, which contains one thirty-sixth of the total population, there were between one-sixth and one-seventh of all the deaths from this disease. Investigation showed that this neighborhood did not differ from other parts of the city in the character of its inhabitants, the source of its water supply or the source of the milk consumed, but, that being an old part of the city, it had an extremely faulty and inadequate system of sewage disposal. The combination of small, inadequate sewer pipes, an almost unprecedentedly heavy rainfall, a large number of old-fashioned privies with no sewer

connections, and a larger number of places with useless connections, resulted in overflow of sewage and the low-lying lots became soaked with excreta containing typhoid bacilli. As houses and shops in this part of the city are mostly innocent of screens, the contamination of food by flies was very easy. This epidemic, like that of the Spanish war, was at its height during the months of flies, July, August and September, and died out with their disappearance. In this case it was possible to demonstrate the actual presence of typhoid bacilli on the bodies of flies caught in and around privies and houses where there were typhoid cases.

Anyone will admit that this mode of infection in typhoid fever should not be ignored, when he thinks of the careless disposal of excreta, the resistant character of the typhoid bacillus, the length of time it may persist in the human body after recovery from the disease, the universal distribution of house flies and their easy access to foods of all kinds. The typhoid bacillus has been found in ordinary, unsterilized soil 315 days after it was planted there. It has survived three months exposure to 19° below freezing. It has lived 25 days in soil exposed to the summer sun. It has been found in the feces of flies 23 days after they had fed on typhoid discharges. In ordinary cases of typhoid fever, care is exercised to disinfect the intestinal discharges only during the height of the disease. Later on, this is stopped and the urine is often not disinfected throughout the attack. Yet the bacilli may be found in the discharges long after convalescence. Especially important is their long persistence in the urine, for urine is often voided in places easy of access for flies. Horton Smith reported a case in which one cubic centimeter of urine contained 500,000,000 bacilli, and Petruschky found them in the urine two months after the temperature had become normal. Physicians practicing in country districts bear witness to the fact that sporadic cases of typhoid fever may appear in scattered farm houses when it is impossible to find the source of infection. But nobody has ever estimated the distance traveled by flies and, though this is a point hard to prove, no one can deny the possibility that they are the responsible agents in some of these cases.

The conclusions are almost too obvious to need statement. Infectious material of any kind is a danger when left exposed to the visits of insects. Rapid disposal of all such material and scrupulous care in the extermination of all insects, especially the common house fly, should be among the most ordinary rules of household and institutional hygiene.

THE STANDARD OF GOVERNMENT MEAT INSPECTION.

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There are three interests to be considered in the inspection of meat intended for food products. The paramount interest which makes inspection necessary is that of the public which consumes the food. The next interest, which may be opposed to the first, is that of the owner of the animals inspected. The third interest is of great importance when the effectiveness of inspection is considered, and that is the personal interest

of the inspector. If he has, in any degree, interests in common with the owner of the animals, the effectiveness of his inspection will suffer. In case the public criticises inspection, it should be self-evident that the other two interests will each feel that they are attacked and will unite in opposing the criticism. Thus, whenever the efficiency of the stock-yards inspection has been questioned, the government inspectors have hastened to back up the packers in their assertions that their inspection is perfect.

Government inspection in the packing houses is not obligatory. It is furnished at request of the packers, who can not dispose of their meat products to foreign buyers without our federal guarantee as to quality. The whole subject of meat inspection is so intricate and confusing, embracing as it does, three inspections, government, state and city, that to go into the subject exhaustively is beyond the scope of this article. Only one phase of it, that relating to the passing of tubercular meat into the public food supply, can here be treated. That this is possible under the rules of the government I propose to show.

To the public, inspection means protection. Government inspection should have all the security of a government bond. To establish inspection in which the interests of the packers and inspectors are permitted to make the standard is to defeat the object of inspection and gives a false security. The public has the right to make the standard of what it will and will not eat. But the greatest responsibility rests upon the medical profession who are best informed as to what is necessary and how to avoid the dangers of diseased meat. It is no credit to the medical profession that government rules for inspection permitted the passing of six grades of tubercular meat for so many years. When I began the preparation of this article, I wrote to Washington for the latest rules of the government and find that Nov. 5, 1905, they were amended so that one grade was omitted, still leaving five to be passed. Within the limits of this paper, it is not possible to comment on all the rules as issued by the Bureau of Animal Industry of the Agricultural Department, so I shall confine myself to those relating to tuberculosis, which are as follows:

RULES AND REGULATIONS FOR THE INSPECTION OF LIVE STOCK AND THEIR PRODUCTS.

UNITED STATES DEPARTMENT OF AGRICULTURE.

OFFICE OF THE SECRETARY, WASHINGTON, D. C., Nov. 7, 1905.

It is hereby ordered that amendment No. 1, dated April 6, 1905, to B. A. I. Order No. 125 be and the same is hereby revoked, and sub-section (k) of section 7 of the Rules and Regulations for the inspection of live stock and their products, dated June 27, 1904 (B. A. I. Order No. 125), be and the same is hereby amended to read as follows:

(k) Tuberculosis.—All carcasses affected with tuberculosis shall be condemned, except those in which the lesions are slight, calcified or encapsulated, and are confined to the tissues indicated in any one of the following five paragraphs, or to a less number of such tissues:

(1) The cervical lymphatic glands and two groups of visceral lymphatic glands in a single body cavity, such as the cervical, bronchial and mediastinal glands, or cervical, hepatic and mesenteric glands.

(2) The cervical lymphatic glands and one group of visceral lymphatic glands and one organ in a single body cavity, such as the cervical and bronchial glands and lung, or the cervical and hepatic glands and liver.

Note.—The pleura or peritoneum may be substituted for the group of visceral lymphatic glands in paragraph (2); for example, the cervical glands, pleura, and lung, or the cervical glands, liver and peritoneum.

(3) Two groups of visceral lymphatic glands and one organ in a single body cavity, such as the bronchial and mediastinal glands and lung, or the hepatic and mesenteric glands and liver.

(4) The cervical lymphatic glands and one group of visceral lymphatic glands in each body cavity, such as the cervical, bronchial and hepatic glands.

(5) Two groups of visceral lymphatic glands in the thoracic cavity and one group in the abdominal cavity, or one group of visceral lymphatic glands in the thoracic cavity and two groups in the abdominal cavity, such as the bronchial, mediastinal and hepatic glands, or the bronchial, hepatic and mesenteric glands.

CARCASSES THAT MAY BE RENDERED INTO LARD.

(6) The hog carcasses condemned, in which the lesions of tuberculosis are located as described in any one of the above five paragraphs, but are in a state of caseation or liquefaction necrosis or surrounded by hyperemic zones, and also those in which slight, calcified or encapsulated lesions are found in more visceral organs or more groups of visceral lymphatic glands than are indicated in any one of the above five paragraphs, may be rendered into lard after the diseased parts are removed, provided they are cooked by steam at a temperature not lower than 220° F. for not less than four hours. JAMES WILSON, *Secretary.*

I wish also to call attention to an explanatory sentence in the introduction to these rules, which reads as follows:

"It is understood, however, that owing to the fact that it is impracticable to formulate rules covering every case, and to designate at just what stage a process becomes loathsome, or a disease noxious, the final disposition of all those not specifically covered by these rules will be left to the judgment of the inspector."

With such a wide latitude for the exercise of his judgment, it is quite important that this judgment should be influenced as much as possible in favor of the consumer. Judgment is the result of education and it is the responsible duty of the medical profession to educate the inspector as to what is loathsome and noxious. The public pays for inspection and also pays a good price for the meat and has the right to know what it is getting. The only excuse that can be given for the present standard of government inspection is ignorance on the part of the public and the medical profession of the actual conditions. The slaughter of domestic animals and their conversion into food products is repugnant and brutalizing and is avoided by all not actually engaged in the work. The workmen in the slaughter houses are largely composed of the most ignorant foreigners, and those who are not, are not likely to discuss their unpleasant occupation. The whole industry is thus walled in by this general aversion, and the inattention of the public eye has permitted the packers

and inspectors to make their own standards. It might be supposed that, if the public is excluded, the workmen would be cognizant of the passing of diseased meat, but this is easily understood by those who are familiar with the methods of slaughtering. The work is not only exceedingly rapid, but is divided up so that each man has but a small portion of the work of killing and dressing an animal. A sheep may pass through almost a hundred hands in being converted into mutton. Each workman performs his part of the work without a thought of what becomes of the rest.

Technical knowledge is essential in detecting diseased meat and this is not possessed by either the average workman or the public. Even the physician who is not familiar with these evidences would permit tons of diseased meat to pass him in the killing beds without knowing it. Physicians are best fitted to say what shall be the standard of condemnation of meat products because they know that disease follows the same laws in both human beings and animals; and they also know that it requires skill to discover disease in one as well as the other. By this standard it is evident to them how much value can be placed on antemortem inspection. They would feel little confidence in the diagnosis of even the skilled professor, if he had to make it from what he saw as his patients walked or trotted past him. Those of us who have been at the postmortem table know that the diagnosis of the most learned professor may be disproved, although he may have had the assistance of the stethescope, microscope, *x*-ray and all the resources of chemistry. Although antemortem inspection has some value, it is evident that the most reliable inspection can only be made at the death of the animal when all the organs are intact. The kidneys may show conditions not revealed in the meat itself. One stroke of the knife and the diseased organs, with their evidence, are separated from the meat.

The safety of the consumer demands that meat inspection should be made in a good light, by one with the technical knowledge that will discover disease and a conscience that will not permit him to pass what he would not eat himself, as well as the power to render *at once* condemned meat absolutely unfit for food. Meat inspection that is inadequate is dangerous because of the fancied security. The greatest factor that influences the inspection of meat is its money value. To make inspection effective, it must be removed from the influence of the owner or producer. Meum et tuum is the cause of wide difference in meat inspection. If it is my meat for sale, it is perfectly good for you to eat. This is the rule of ownership. I speak from experience, for I can name a Christian physician who bought a stock farm; whose cattle developed actinomycosis and he shipped them to the stock yards. They all passed but three, which were rejected by the city inspectors, after they had passed the state inspectors. The doctor tried his best to get them through, urging that they were all right.

Bovine tubercular bacilli are recognized from laboratory experiments as being the most virulent of all tubercular bacilli. Experience shows that life out doors with sunlight and fresh air furnishes an environment

that produces the greatest resistance to the invasion of the tubercular germ. From this fact, it may be understood why a tubercle bacillus must have great virulence if it is able to bore its way into the vitals of the mighty bullock, and how dangerous must be its transference into the tissues of the light and air-starved human beings in the city. McFarland, in his text-book on bacteria, says: "From these data (a series of animal experiments) it is evident that the bovine bacillus is by far the most virulent and dangerous organism. While the human tubercle bacillus infects cattle with difficulty, the bovine bacillus infects animals, and probably man, with great readiness."

The report of the Bureau of Animal Industry for 1904, in the article on "Danger of Infection with Tuberculosis," is worthy of careful study. After referring to those followers of Robert Koch who point out that the majority of tubercles found in human lesions with sufficient virulence to infect cattle are isolated from children, and that these were really bovine bacilli contracted from drinking milk, the article continues as follows:

"In this connection, a reference made in a recent number of the *British Medical Journal,* and in other publications, to the latest recorded observations of the German committee for the Investigation of Tuberculosis, which came into existence after the declaration of Doctor Koch for the distinctive grouping of the human and bovine tubercle bacilli, is of great interest. We are told that 56 different tubercle bacilli were isolated from human lesions, and that six of them, or 10.71 per cent. were found to be bovine tubercle bacilli. The human bacilli are distinguished from the bovine by morphological characteristics. We are also told that tubercle bacilli are constant in their varietal character, hence human bacilli are always human bacilli, and bovine bacilli, likewise, always bovine bacilli."

Again he continues in another paragraph: "The exposure of man to human tubercular infection is infinitely greater, and this fact is generally admitted. The bacilli encounter him everywhere—on the streets, in public rooms, in public conveyances, on articles of food handled by affected persons and not afterwards sterilized by the application of heat, carried into his house on his own clothing and especially on the long skirts of women, in the books obtained from libraries, and, in one of the worst forms, in the atmosphere, while conversing with tubercular-infected persons. And yet, a responsible investigating committee, composed of men presumably selected with a careful regard for their ability to deal with the subject, announces that over 10 per cent. of the tubercle bacilli isolated by them from human lesions in a series of special investigations are bovine tubercle bacilli, and that bovine tubercle bacilli are morphologically constant organisms. It almost justifies the assumption, when we bear in mind that human bacilli are rarely virulent for cattle and a number of other animals and that bovine bacilli are infectious for a great variety of animals—the Quadrumana, the closest possible biological approach to man, included—that tuberculosis of man would be a much simpler problem to deal with, if the constantly occurring accretions of superlatively virulent bacilli through the milk pail, could be effectually stopped."

An important fact in the series of experiments, recorded in this report of the Bureau of Animal Industry, is that the animals which were slightly affected were capable of infecting others. On the other hand, animals badly affected did not cause the degree of infection which the extent of the disease seemed to warrant. This emphasizes the well-known fact that it is virulence as well as numbers, in tubercular infection, that must be considered. The milk or meat from a badly affected animal may not be as dangerous because of its low virulence, as the milk and meat from an animal with a limited tubercular area of a virulent type. A tubercular gland is a tubercular area communicable with the fluids of the body, in which the tubercular bacilli are able to colonize. From this focus bacilli are being continually thrown out. The inoculation of other tissues depends on their immunity or resistance.

Let us take, for example, a bullock with tubercular glands, which permit it to be passed by the government inspector, and outline the average conditions attending the transportation of stock to market. This animal, probably in some western state, objects to leaving its pasture; is chased, perhaps, beaten and finally driven to a cattle pen, where it may have to defend itself against hostile fellows. It is then crowded into a stock car, which is an open cage, and whirled across the prairies, exposed to the prevailing weather. The law permits it to be left without water, rest or food for 28 hours. Then it reaches the stock yards and at last the killing beds. Could a better method be devised for breaking down that animal's resistance to the virulent bacilli coursing through the fluids of the body? The only part, it is reasonable to believe, that would be free from tubercular bacilli, would be the hoofs and horns. Yet the rules of the government permit this meat to come on your table and mine. The government officials justify this standard by saying that the meat of the American is not eaten raw, but cooked. This is not always true. Many persons prefer their meat rare and it is a common practice for the medical profession to prescribe raw beef juice. When Rudyard Kipling was ill with pneumonia, his diet was raw beef juice. Imagine the results of feeding a patient recovering from pneumonia with raw juice from a tuberculous animal!

While the intentional inoculation of human tissues with bovine tubercular bacilli has not been accomplished, there have been accumulating a large number of accidental inoculations. I shall quote one or two from the report of the committee of the American Public Health Association: "L. Pfeiffer cites the case of Veterinarian Moses, 34 years old, of healthy family and personally in good health, who pricked his left thumb in making an autopsy on a tuberculous cow. The point of the knife probably penetrated into the articulation of the first and second phalanges. The puncture healed without suppuration, but at the end of six months, there formed at the cicatrix a cutaneous tubercle, and the joint was removed. Soon after the patient began to cough and died of phthisis, 18 months after the accident. On opening the articulation of the thumb it was found filled with caseous masses, extraordinarily rich in tubercle bacilli."

"A very interesting case of 'primary subcutaneous tuberculosis' caused by the topical application of cream, was reported by Grothan. A little

girl six years old had suffered from an eruption on the left leg, supposed to be due to ivy poisoning. This was treated at home by the application of fresh cream. When seen by Grothan, there was a painless ulcer of irregular shape the size of a 25-cent piece on the posterior aspect of the leg, having the characteristic appearance of a tubercular ulcer, with reddish-tinged borders slightly overhanging the floor, which was covered with granulations and watery pus. There were also about a dozen light mahogany-colored spots confined to the calf of the leg and lower third of the thigh, varying from the size of a hazelnut to the half of a large walnut and containing masses of caseous material. The cow was examined and the udder seemed normal, yet inguinal and intraperitonal inoculation of two rabbits with a mixture of milk and cream gave positive results in both inoculations. The caseous material from the nodules of the girl's leg, injected into the peritoneum of a rabbit, produced tuberculous peritonitis and death in about three weeks. The family used milk from one cow only at the time the application was made."

Dr. M. T. Naughton, of Chicago, communicates the following, which was observed in his practice: G. E. W., Pole, age 24, weight, 170 pounds; healthy looking man; butcher by occupation. Family history negative. Father of three healthy children. Has no recollection of having been previously sick. On May 3, 1899, while cleaning cattle viscera, he fell and a stationary meathook, upon which hearts and lungs are hung, penetrated through the right hand between the second and third metacarpal bones. A tendo vaginitis resulted, with some lymphangitis of the arm. He received the usual treatment for an infected wound and apparently made a good recovery with, however, some limited motion of the fingers and a sensitive scar at the site of puncture. Four months afterwards, an abscess formed in the axilla, which was cleaned out and tubercle bacilli were demonstrated in the broken-down gland tissue. At this time there was no soreness in the arm lymphatics or elbow gland, but he complained that there had been. In three months afterwards, or seven months from the original accident, he died from pulmonary tuberculosis.

These are very clear cases and could be multiplied to add strength to the evidence. If the bovine bacillus, when inoculated in the skin, produces, at least, as serious results as the human bacillus, we have a right to conclude that mankind is equally susceptible to the bovine as to the human form of contagion.

The more we study the control of human tuberculosis, the more we must be impressed with the interdependence of the animal and the human in this disease. Keep in mind the virulence of the bovine tubercle bacillus; the infant population increasingly dependent upon cow's milk for food; the enormous amount of beef that is eaten without being sufficiently cooked; and the danger from exposure of those engaged in the cattle industry. Realizing all this, it is impossible to escape the conviction that the eradication of tuberculosis from the human race must first include its eradication from the domestic animals. The first step in this direction must be to close the market against tubercular meat. Animal tuberculosis is largely the result of conditions which the farmer can remedy if he is made to recognize them. Neither the butcher nor the packer should lose

all the diseased meat for they are not responsible for its presence. Every animal that goes into the public food supply should be so marked that it may be traced to its owner or producer. The giant task of restricting and controlling tuberculosis among domestic animals will never be any easier. The public does not ask an impossibility, when it demands that the government shall supply an inspection which will protect every table from tubercular meat.

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After the completion of this article, I notice the following in the Health Department bulletin, issued March 24th:

"At a conference held during the week, between representatives of the United States Bureau of Animal Industry and the department, it was arranged that the government and the department inspectors should work on a uniform system, and that the rules and regulations of the bureau, as amended, and now agreeing with the rules of the department, shall hereafter be the basis of condemnations by both sets of inspectors."

Just how far this incident remedies the previous conditions, and the reason for this sudden change, I do not know. I think it proper to call attention to the following paragraph from the rules and regulations of the government for the inspection of live stock and their products:

"No. 13.—Should the owners of condemned carcasses not consent to the foregoing disposition of them, then the inspectors shall attach to such carcasses, or parts, a condemnation tag, by means of a wire and lead seal and brand the word 'condemned' upon each side and quarter, or piece of such carcasses and communicate the facts to the department. The seal so attached shall have the word 'Condemned' impressed upon the one side and the letters 'U. S. A.' upon the reverse side. A record must be kept of the kind and weight of the carcasses and they shall, under the supervision of the inspector, or his assistant, be removed from the abbatoir; and said firm or corporation, shall forward, through the inspector, to the Secretary of Agriculture, a sworn statement monthly, giving in detail the disposition of the carcasses so condemned, and, if the same have been sold, showing to whom, whether for consumption as food or otherwise, with what knowledge, if any, by the purchasers of their condemnation by this department, and whether or not before such sale said carcasses have been cooked or their condition at the time of inspection by this department altered, and if so, in what way."

Thus you see that after all the condemnation, branding and tagging, the government can not destroy a pound of this meat if the owner objects but must hand it back to him with no punishment for sending it into the public food supply. The enormous responsibility for the destruction of diseased meat rests on the commissioner of health of the city of Chicago.

With a knowledge of this fact—that the legal destruction of diseased meat is in the hands of the city inspectors—I wish to quote the following from the Health Department Bulletin of March 31, 1906: "The meat inspectors at the Union Stockyards during March, 1906, condemned and destroyed 445 cattle, 554 hogs, 42 calves, 18 sheep, 2,080 pounds of dressed meat—a total of 367,271 pounds."

There was no inspection at the stock yards during March, 1905.

SOMNOFORM ANESTHESIA.

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Anesthesia is a subject in which every physician, every surgeon and every specialist takes the most profound interest. A few years ago Dr. Rolland, late house surgeon of Paris Hospital, professor of anesthesia, and dean of Dental School and Hospital of Bordeaux, France, realized that new discoveries were being made almost daily along the lines of medicine and surgery, but anesthesia had been left in the background. So, after several years of hard work, study and experimenting, he discovered that which he so anxiously sought, a new anesthetic, composed of three well-known drugs, in proportion as follows: Chlorid of Ethel, 60 per cent., Chlorid of Methyl, 35 per cent., Bromid of Ethel, 5 per cent. This combination he called "Somnoform." It will be seen that the various constituents of Somnoform are all well-known anesthetic agents. The operator must not, however, on that account be prejudiced against the drug, for it is not possible to predict the results which may follow from a mixture by merely knowing those of its components. You all know that the combination of two or more drugs changes the action of the drug. By experimenting, Dr. Rolland found that the combination of these three anesthetic drugs gave him his ideal anesthetic for all minor operations. To blend already well-known drugs into one mixture from which the respective advantages of each one could be obtained and corresponding effects produced, without having many of the inconveniences and the same degree of danger of the individual drugs, was the fascinating problem which after long and patient researches, Dr. Rolland solved so ably.

A series of 1,500,000 favorable cases confirms without doubt the satisfactory laboratory experiments previously carried out, showing conclusively the advantages of this agent over chloroform, ether and nitrous oxid, from the minimum of danger incurred by its administration when employed for brief anesthesia. For this part of my paper, showing the physiological action of Somnoform, I am indebted to Dr. Aguilar, of Madrid, Spain, who read a paper on anesthesia at the St. Louis Exposition in 1904. From the brilliant work done by Dr. Rolland, these notes have been prepared. In order that an anesthetic should enter the respiratory tract and act on the nerve centers, it must be in the gaseous form; and the rapidity of its absorption is in direct ratio to its degree of diffusibility. The blood corpuscles become saturated with the narcotic vapors instead of with oxygen; therefore, the action of the gas on the nervous system will be rapid in proportion to the rapidity of absorption. Dr. Rolland presents the problem of anesthesia in the following propositions:

1. To produce anesthesia, it is necessary that the tension of the anesthetic gas be superior to that of oxygen, so that it may, in a certain proportion, take the place of the latter in the pulmonary alveoli. 2. The tension of the gas being proportionate to its volatility, the more volatile the gas is, the easier can it be made to take the place of oxygen. 3. The

ideal anesthetic, if such be attainable, would be the one behaving in its conditions of entry, of sojourn, and of exit from the body, as does oxygen. If we follow the course of oxygen in the body, we see that the red corpuscles, after becoming charged with oxygen in the lungs during inhalation, distribute it to the tissue throughout the body. The blood corpuscles have their period of activity during their course through the arterial system. When the oxygen has been given up, the corpuscles return through the venous system to the lungs in an inert and dormant state; and there,by contact with the oxygen, resume their activity. Now, as about twenty-five or thirty seconds are necessary for a red corpuscle after leaving the heart to return to it, the action of the oxygen would last from twelve to fifteen seconds; therefore, an anesthetic capable of being absorbed practically in the same manner as oxygen, should produce its effects in about fifteen seconds, and when the administration is discontinued it should be eliminated in proportion, as the corpuscles of the blood again come in contact with the oxygen. This, almost to precision, is what takes place with Somnoform. In the study of this physiological action we observe that Somnoform produces the following phenomena.

ON CIRCULATION.

Somnoform has a powerful action on the sympathetic system, increasing the arterial tension and the frequency of the cardiac contractions. A series of curves of the blood tension, taken with the sphygmograph of Marey and the sphygmomanometer of Potain on the radical artery of Dr. Rolland, showed in twenty minutes a variation of from 13½ of normal blood pressure to 14½, 17, 17, 13, 14, 15, 14, 14, 13½, during, through and after the anesthesia. The pulse, which was formerly 76 per minute, presents in the same observation a frequency of 76, 84, 76, 76, 68. Respiration, which, when normal, was 16 per minute, went up to 28, 20, 19, 20, 20, and a careful microscopical study of the blood of subjects under Somnoform showed that the anesthesia of from five to eighteen minutes' duration, produced no important modifications in the blood. The urine of the anesthetized person also remained normal.

THE NERVOUS SYSTEM.

Microscopical studies of the cerebral centers show the modifications produced by Somnoform on the neuron. The neuron, as is well known, is the anatomical nerve element, or the nerve cell and its branches, as discovered and investigated by Ramon y Cajal, of Madrid, and is composed of three parts: first, a central part, which is the real cell, with its protoplasma, with and without peculiar affinity for coloring matter and its nucleus; second, a peripheral part, made up of protoplasmic branches and the various ramifications (dentrites), with ends which do not anastomose; and, third, the more peripheral part formed by the axis cylinders, which do anastomose.

THE CEREBRUM AND CEREBELLUM.

The investigations were made on the cerebrum and cerebellum of rabbits and cats; first, on non-anesthized animals (control subjects);

second on the animal at the end of anesthesia, varying from five to fifteen or twenty minutes; third, on animals at the end of prolonged anesthesia (one hour or more); and, fourth, on the animal one hour after consciousness had returned. The staining of tissue was made by the rapid method of Ramon y Cajal, of Madrid, and by the intravascular injection of Gubler's methylene blue. In the right carotid artery of the animal experimented upon, injections were made every five minutes of from two to ten c.c. (or according to the size of the animal) of methylene blue. At the end of half an hour the braincase was opened and the microscopic sections were obtained. The researches were always controlled on non-anesthetized animals. The change brought about in the neuron by Somnoform differs in the various regions of the cerebrum and cerebellum, also in accordance with the duration of the anesthesia.

FIRST SERIES; SHORT ANESTHESIA.

Cerebral Covering.—The pyramidal cells, with their branches, remain normal; they did not change in size. The chromophile granulations of the protoplasm could be clearly seen; the nuclei were normal.

Cerebellar Covering.—The methods of Golgi and Nissl show the sharp modifications undergone by the cells of Purkinje, a slight deformation and irregularity of shape. The protoplasmic prolongations were varicose. It appears that, from the beginning of anesthesia, the mixture has a particular action on the nerve elements of the cerebellar covering.

SECOND SERIES; DEEP AND LONG ANESTHESIA.

In this series of experiments the guinea-pigs died at the end of a quarter of an hour, or after twenty minutes. Cats, as well as rabbits, resist for several hours. Where fragments of the nerve centers have been removed from the living animal, or from an animal which has just died, the results obtained by examination are the same, and the modifications are as clear in the cerebral as in the cerebellar covering.

Cerebrum.—The cells diminish in volume. The protoplasm presents excessively clearer zones, and the protoplasmic branches remain intact.

Cerebellar Covering.—The modifications of the cells of Purkinje are very marked. The protoplasmic branches are deformed and present varicosities and knots.

THIRD SERIES; ONE HOUR AFTER RECOVERY.

There was a return of all the elements to their normal state, excepting the cells of Purkinje, which are slower to regain their normal form. Speaking of these experiments, Dr. Rolland concludes as follows: "Somnoform has an elective action on the cells of Purkinje, thus suppressing sensitivity to pain and temperature—its passage through the cerebellum; and, when there is saturation of excess of the anesthesia, the pyramidal cells are impressed, determining loss of consciousness." It only remains to state that the results of this observation show that the minimum of danger is incurred in the administration of Somnoform, which, during a short operation, causes sleep without, in any way, acting on the cerebral covering. This selective power on the part of certain substances for a

definite portion of the nervous system should not be surprising to us. We know, for instance, that chloroform, ether and alcohol have in their action a preference for the cerebral covering; that cocain in moderate doses acts on the peripheral endings of sensory nerves; that strychnin shows a preference for the cellular elements of the anterior columns of the spinal cord; that nicotin paralyzes the nerve cells of the sympathetic ganglia; that curare acts on the motor nerve endings. These experiments show conclusively that Somnoform acts first on the cerebellum and, secondly, on the cerebrum.

CLINICAL STUDY.

Somnoform, as is the case with any other anesthetic, determines in the patient three well-defined states: First, preanesthetic period, or that of induction; second, anesthetic period, or that of resolution; third, post-anesthetic period, or that of elimination or return to consciousness. In each of these periods we observe two types of phenomena, subjective and objective. The subjective phenomena in the first period are emotional, a feeling of anxiety, of blurred vision, of suffocation, tinnitus aurium, light tickling in the extremities, and the strange sensation of having a warm compress on the cerebrum from the occipital to the frontal lobes. In the second period, or that of anesthesia, the patient experiences no sensation whatever. The third, or postanesthetic period, commences by a sensation of far-away buzzing, the reappearance of the sense of hearing, dreams of different types, gay, religious, amorous, professional, etc., generally in relation to the subject of which the patient was thinking immediately before the anesthesia. At first, he fails to recognize the place and the persons that surround him. This state is followed by a return of motion, with a tickling in the extremities.

Clinical Classing of Cases.—Clinically, we can group the patients, as follows: The first class, embracing 90 per cent. of all cases, consists of those patients who are tranquil and unresisting. With a dose of from three to five c.c. in from fifteen to twenty seconds they are anesthetized, and they remain so from fifty to seventy seconds and sometimes for nearly two minutes. When they regain consciousness they are pleased, and express satisfaction and wonder at the slight amount of inconvenience they have experienced. The second class will be more difficult to anesthetize. It comprises the restless class of patients who involuntarily resist anesthesia. When the administration begins, they fight to get the mask off the face, they swallow but do not breathe, at first; sometimes they cry out, but finally lapse into unconsciousness. These patients are found in the proportion of 8 or 9 per cent. The third class of patients is composed of the alcoholic, hysterical, epileptics, and tobacco users. They are difficult to anesthetize, and the elimination of the anesthetic takes place slowly; they are irritable and the anesthetic seems to have on them a hysterogenic action, provoking a nervous crisis. Fortunately, patients of this kind will be found only in a small proportion of about one per cent.

After deciding to make a specialty of administering anesthetics for extracting teeth, and for all minor surgical operations, I purchased a Somnoform outfit. After several hundred very successful administrations

I feel that I am in a position to verify the statement of one of our most eminent writers, that "Somnoform is the greatest clinical discovery of modern times." After first taking the anesthetic myself and finding it so pleasing in its action and so perfectly satisfactory in its results, I felt that I could safely recommend it to my patients as a very pleasant and easy anesthetic. My knowledge of administering the drug was limited to the directions accompanying the outfit. I naturally met with some little trouble with some patients, owing to inexperience, all of which were overcome after careful experiments. I found Somnoform, like all other anesthetics, does not work well with alcoholics, epileptics and tobacco users. They are difficult to anesthetize, and the elimination takes place very slowly. My experience has taught me, however, that this class of patients take Somnoform better than nitrous oxid, chloroform or ether. I have administered Somnoform to all classes of people, old and young (my oldest patient being nearly eighty years of age, my youngest being only two years of age), to anemics, insane, sick or well, with most gratifying results in all of my several hundred administrations.

One experience, which was quite an amusing one, was in the case of an elderly physician, who came to my office to have two teeth extracted. He objected to an anesthetic, saying, "He did not think he could be anesthetized." I finally prevailed upon him to allow me to administer Somnoform. Before beginning the operation I laid my forceps on the table in front of him, remarking that I would extract the upper tooth first, then the lower one on the opposite side, but doing exactly the reverse. He was thoroughly anesthetized. Upon regaining consciousness, he declared that he knew everything I did during the operation, but he did not experience any pain. I asked him which tooth I had extracted first. He was quite sure that I had extracted the upper tooth first, as I had told him; but when his friends laughed and told him of the joke I had played on him he was forced to admit that he knew nothing of the operation. In one case, where a friend timed the operation, in fifteen seconds after placing the inhaler over the face, I was operating, extracting eleven teeth, and in one minute and fifteen seconds the patient was thoroughly awake and knew nothing whatever of what had been done. A physician brought to my office an anemic, who was suffering with an alveolar abscess of two years standing. She had visited other dentists and physicians, who all advised her not to take an anesthetic of any kind, on account of her anemic condition, but the woman had become desperate, said she preferred death to continual suffering, and it was through her pleading that I consented to perform the operation. Her anemic condition showed no marked difference during the anesthesia. I removed three roots, the direct cause of the alveolar abscess, and the patient got out of my chair exclaiming that she did not realize that she had been under an anesthetic. This patient had been confined to her bed for the greater part of two years, and on the day following the operation she sent me word that she had never felt better in her life. My first experience with a child was the case of a little girl eight years of age, who came into my office smiling, and said she wanted to take gas and have a tooth extracted. I gave her Somnoform and immediately upon her awakening after the operation I asked her how she felt. She said, "Fine and dandy." Another patient

was brought to my office by a prominent dentist from the North Side. He said he had tried on three different occasions to anesthetize the patient with nitrous oxid, and that he had given her enough gas to fill a balloon. Each time his efforts were unsuccessful, so he decided to try Somnoform, and brought her to me. She had several very bad roots to be extracted. I anesthetized her four times during the one sitting without any trouble to myself or inconvenience to the patient. Another patient had the roots of eighteen teeth to be extracted. They were so tightly embedded in the process and the hemorrhage was so great that after extracting two or three teeth, the mouth would be so filled with blood that I could not see to operate, so I allowed the patient to wake up and get rid of the blood. After I extracted the last tooth, I was surprised to find that I had administered the anesthetic eight different times at one sitting. On another occasion, a dentist brought a patient, an extremely nervous and excitable subject. Her physician had tried for over two hours to anesthetize her with chloroform, but had to give it up. At first she resisted the anesthetic, but after working about twice as long as with an ordinary patient I succeeded in thoroughly anesthetizing her. Both patient and dentist were greatly pleased with the operation. I would like to call your attention to the case of a young man who called on a neighboring dentist to have two roots extracted. Immediately on getting into the chair he fainted. The dentist called in Dr. C. G. McCollough to assist him. After reviving the patient Dr. McCullough advised the dentist to send him to me and have the operation performed under Somnoform. He came into my office looking very pale and feeling quite nervous. He took the anesthetic very quietly and after the operation he revived and seemed to be all right, but after a few minutes he complained of feeling faint. I administered a restorative and in a short time he left saying that he felt fine. Later in the day the doctor and dentist both called to see if there were any unpleasant features following the operation and were greatly surprised to learn that there were none worth mentioning. I administered Somnoform to an epileptic, who frequently had as high as four convulsions a day. I gave her the anesthetic four times and extracted several very bad roots. During, or after the operation, there were no bad symptoms whatever. I gave an anesthetic for Dr. Clark W. Hawley for an operation on the ear and throat, and the removal of tumor on the neck; for Dr. R. H. Brown for the removal of tonsils and adenoids; for Dr. N. LaDoit Johnson for internal examination, removal of toe nail, and circumcision; for Dr. D. C. Orcutt for operation on the nose and ear; for Dr. Casey Wood for an operation on the eye; for Dr. N. M. Eberhardt for hemorrhoids; for Dr. Francis Buss for tonsillotomy; for Dr. F. H. Skinner for oral surgical operations. As I understand these gentlemen are present and will enter into the discussion of this paper, I will leave it to them to give you their views on Somnoform. I also administer the anesthetic for preparing sensitive cavities in teeth, opening abscessed teeth, and for lancing abscesses, with the greatest success. In order to ascertain the induction and available time, observations have been made officially at Bordeau School on five hundred patients unprepared for being anesthetized and chosen at random, the operation

being carefully timed with a stop watch. With an average dose of 2½ c.c. the average induction is 30 seconds and the average duration 73 seconds.

Advantage Over Nitrous Oxid.—According to one anesthetist, the induction of nitrous oxid is 73 seconds and the duration 24 seconds, showing that the induction under Somnoform is less than one-half that under nitrous oxid, and the duration is more than three times as long. Some operators with nitrous oxid use a nose inhaler, keeping the patient asleep until the operation is completed; but after I have been working from a minute to a minute and a half, owing to the excessive hemorrhage, which prevents operating with any degree of satisfaction, I prefer to allow the patient to wake up and get rid of the blood. I have no trouble to induce the patient to take the anesthetic twice or three times if necessary. For these reasons and others which I will not take time to mention, I have discarded my nitrous oxid apparatus entirely. Dr. Rolland found that, in experimenting on animals, when anesthesia had been pushed to its extreme limit, with intent to kill, that respiration ceased before the heart's action. When artificial respiration was resorted to, the animal speedily recovered. In some cases the animals had ceased to breathe six minutes before the heart stopped beating, giving ample time for artificial respiration. With the absence of asphyxia goes a total absence of cyanosis, the complexion remaining perfectly normal during the entire length of the anesthesia. There is no oxygen available in Somnoform, yet there is a striking absence of any cyanosis. I am inclined to attribute this to the very quiet respiration. During my experience with nitrous oxid I had quite a scare with two or three patients, one was an athlete, another was a trained nurse, and still another was a professional singer, all of whom were practicing deep breathing daily. In all three cases respiration ceased entirely. I was obliged to resort to artificial respiration, and, when about ready to give up hope, I succeeded in reviving the patient. I believe that with these deep breathers, nitrous oxid gas completely paralyzes the muscles of respiration. Only a few days ago a patient called to have a tooth extracted. I administered Somnoform. When commencing the operation, I noticed that he breathed the same as these other patients had, and was prepared to meet with the same unpleasant symptoms, but, to my surprise, they were lacking entirely. After the patient revived I asked him if he were in the habit of practicing deep breathing. He informed me that he was a daily visitor at the gymnasium where he practiced a number of deep-breathing exercises. From my observations I find that the safety of Somnoform lies in its exceedingly rapid absorption and its equally rapid elimination from the system, a very important matter in anesthesia, as there is no swelling of the tongue to impede the operator, and the relaxation of the muscles enables him to make full use of the time at his disposal.

Indications of Complete Anesthesia.—The ocular movements cease in about 20 seconds, the period of induction averages about 30 seconds, the duration of the anesthesia averages about 76 seconds. The anesthesia deepens after the removal of the mouth piece. Eyelids droop, pupils become dilated, soft snoring often ensues, usually complete muscular

relaxation, rigidity being the exception, conjunctional reflex generally lost.

After Effects.—There are scarcely any bad effects whatever. If any, they are due to inexperience on the part of the operator, such as administering an overdose of the drug, allowing the patient to swallow too much blood, permitting patient to leave the chair too soon after the operation, or performing the operation too soon after patient has eaten a hearty meal. Any of these things will produce nausea. One writer claims that these cases of nausea are on an average of 1 per cent. My experience has shown a larger percentage than that. I have also observed that patients will experience a feeling of nausea after abstaining from two or more meals before the operation. Somnoform is put up in two forms—a bottle of 60 grams containing enough of the mixture for from 16 to 18 anesthetics, and in capsules containing from 3 to 5 c.c., for single administrations. I prefer the bottle, because I administer it so often, but I find that it deteriorates after standing for some time. I would advise the use of the capsules where one administers it only occasionally. Some writers claim that nitrous oxid can not be used under certain climatic conditions. In order to find out the effect of tropical climate on Somnoform, I took an outfit with me on a trip to Central America in 1905. On landing at Ceiba, a seaport town on the northern coast of Spanish Honduras, I was notified by the officials that all of the other ports were closed on account of the yellow fever, and their advice to me was to go into quarantine for the required time and get out of the country on the first steamer leaving port. Dr. Reynolds, the American surgeon, and some of the native surgeons were very anxious to have me try my new anesthetic, and were quite disappointed as well as I was that I was not able to do so. I was in Ceiba four days, but feared to experiment with it, as something might happen which would cause the officials to detain me in the country. I came back to North America, a sadder man, but no wiser in so far as Somnoform was concerned. Somnoform is being rapidly introduced in hospitals throughout the world, and has been used for many years in many well-known hospitals in England.

In conclusion, I consider Somnoform the most valuable anesthetic for all minor operations, from the rapidity of its induction, its length of available anesthesia, and the possibility of administering it to all patients and without special preparation, from its pleasant effects, and from its safety, demonstrated not only by the investigation on its action on the nerve centers, also by a clean record of over 1,500,000 cases. I might state that I searched all of the medical and dental journals of this and other countries to secure the mortality of Somnoform, but was unable to find any. Since completing my paper, a journal came to my notice with an article written by one of our nitrous oxid specialists entitled "Nitrous Oxid versus Somnoform." He claims in his long search that he found three precious lives had been lost by the use of this "dangerous drug," as he called it. As he did not give the mortality of nitrous oxid gas I will finish his article by stating that some authorities give nitrous oxid, 1 to 25,000, while others give 1 to 50,000. If these 1,500,000 patients had taken nitrous oxid gas instead of Somnoform, 30 or 60 precious lives would have been lost instead of the 3.

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF THE ILLINOIS STATE MEDICAL SOCIETY.

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JUNE, 1906.

THE SPRINGFIELD SESSION.

The fifty-sixth annual meeting of the Illinois State Medical Society which convened at Springfield on Tuesday, May 15, was by far the best and largest meeting the Society has ever had. Secretary Weis estimated the number in attendance at between six and seven hundred, and, while this figure may be a little high, yet it is undoubtedly true that more medical men attended the sessions of the State Society than ever before. The program embraced 90 papers, which were not, however, all read, but it is undoubtedly true that a greater number of papers was read than at any previous meeting, and the character of the contributions was exceptionally high. Probably the most gratifying part of the meeting was the good fellowship which existed. An animated debate occurred in the House of Delegates with reference to an increase of the number of councilors for the third district, but so good natured was the assembly that no hard feeling whatever resulted when an adverse vote on this proposition was given. The matter of the Medical Defense Fund was agreed upon unanimously, and it only remains now for the local Society to take up this matter courageously and industriously to make it a great success. A movement was started which will undoubtedly result in the introduction of a bill at the next meeting of the Legislature to regulate the manufacture and sale of patent and proprietary remedies. The tuberculosis question was thoroughly canvassed, and this matter will again be brought to the attention of the general assembly.

The matter of life insurance fees was also taken into consideration, and the State Society went on record as being against a reduction on the part of the old-line companies.

In the Surgical Section steps were taken to bring the attention of the Society to the necessity of educating the people in regard to the cancer problem. This action was taken too late to be acted upon by the last general session, but it will be brought up at the next annual meeting. An unusual feature of the session was the clinics held at the hospitals for diseases of tne ear, nose and throat. The great interest attached to this feature we hope portends a change in the Society meetings in the near future by which the clinic feature will be brought into deserved prominence, and practical demonstrations of an educational nature will take the place of formal papers and discussions. The State Medical Society can learn the lesson and profit from the sessions of the State Dental Society. The dentists of Illinois come together annually for a four days' meeting, with morning, afternoon and evening sessions, and at least two-thirds of the time is given to clinics which are not at all limited to the professors of the dental colleges. Any dental practitioner in the State who has discovered an improvement in any dental operation has the opportunity of submitting it to his colleagues at the annual session, where it can be commended or criticised as its merits deserve. Of course, it will not be quite so easy for the medical men of the state to carry on clinics, but undoubtedly a great deal more can be done in this connection than has been done in the past. The social features of the meeting, embracing a reception by the Governor and wife at the Executive Mansion and a picnic lunch, concert and vaudeville entertainment at the park, were especially enjoyable. Members and their wives to the number of about 450 attended the park entertainment, and a photograph of the assembly was taken on the steps of the casino. The interest extended through the third day, and more auditors listened to the papers on Thursday than is usual on Wednesday, which has heretofore been considered the big day of the annual sessions. Another important step was taken when the topics were divided into subjects especially interesting to medical men to take up one day, subjects interesting surgeons another day, and subjects of a mixed character for the third day. We may not have mentioned everything that occurred at this meeting, but from the short review above given it will be seen that the session was replete with interest and that the Society is in better condition at present and with greater prospects of growth than ever before. The fifty-sixth annual meeting will, therefore, be remembered with great pleasure by all those who attended the sessions.

A STRONG FACTOR IN ORGANIZATION.

The Springfield session of the Illinois State Medical Society was, perhaps, the most successful ever held. By far the most important action taken at this meeting was the adoption, by the House of Delegates, by a unanimous vote, of the system of medical defense proposed by the Committee appointed two years ago. It is a matter of congratulation and pride that the Illinois State Medical Society has been among the first of the State Associations to adopt a uniform plan of defense, embracing and protecting every member of the organized profession in the state. We do not hesitate to predict that this will prove to be the most

potent act for the completion of organization and the unification of the profession throughout the state that has ever been inaugurated by the State Society. It is now three years since the Chicago Medical Society introduced the feature of medical defense as one of the advantages of membership. The experience of this society has proven beyond a doubt that co-operative protection against malpractice and damage suits is the strongest argument that can be presented to the individual physician to induce him to become a member of his local medical society. Not only does the introduction of this feature mean increased membership and greater promptness in the payment of dues, but it also means a community of interest, a co-operation and a solidarity never before possible. It has been abundantly demonstrated that 90 per cent. of all malpractice and damage suits against physicians originate in the activity of some members of the legal profession, who work up these cases upon a contingent fee basis. The lawyers who do this kind of work generally possess more shrewdness and knowledge of the weaknesses of human nature than they do reputation and standing in their profession. They know full well that the average physician is rarely threatened with damage suits and that the average lawyer has had little or no experience in their management. When they find that, instead of having one member of the profession and a hastily prepared and illy-equipped lawyer to fight, they have opposed to them the organized profession of the county and state represented by an adequately paid lawyer who is able to devote his time to this case; it usually happens that they advise their clients to withdraw their suits, as there is no prospect in view except the possibility of having the court costs assessed against them. The result is that the only cases left for the committee on medical defense to handle are those in which there is a real basis for action or where the plaintiff honestly believes he has cause for action. Such cases can almost invariably be settled out of court in a manner that will prove an actual saving in money to the physician, to say nothing of the saving in time and labor.

If the medical defense plan proves as potent a factor in bringing new members in the state as it has in Cook County (and there is no reason why it should not) two years from now should see a state society of seven thousand members, including practically all of the reputable members of the profession in the state. The Illinois State Medical Society has never undertaken a work of greater importance than this. The experiment will be watched with great interest by all of the other state associations. If it is successful in Illinois, it will be quickly taken up by our sister associations. The management of the fund and the conduct of the work is to be in the hands of a committee composed of one member from each county society in the state. These men should be selected with the greatest care. Each county society should be sure that the member selected to represent them will be active, diligent and untiring in his efforts to conduct this work so that it may redound to the benefit of the state society as well as to each county society and every member thereof. If the experiment is successful, in a few years the State Society will be in a position to undertake other lines of work, such as the payment of court costs or of damages following suits against its members or the establishment of a central business bureau for conserving the business in-

terests of its members. Much depends upon the men in whose hands this work is placed. It is to be hoped that each county society will fully consider the matter and will select its representative with care and foresight.

THE APRIL MEETING OF THE COUNCIL.

The council met at Decatur, April 5, 10 a. m., and continued in session until 5 p. m. There were present Councilors Ensign, Will, Harris, Stealy, Mitchell, Barlow and Weis. Councilor Barlow reported that there had been no new developments in Champaign County respecting the conflicting societies existing there. Secretary Weis reported having issued a charter to Randolph County and presented an application for recognition as a component society of Moultrie County. After some discussion on the question of errors and duplication of names on the mailing list it was moved and carried that the secretary take charge of the mailing list and correct the same every month.

It was moved by Black and carried that the secretary be instructed to drop all names from the mailing list who are not paid for, as defined by the by-laws, and not to add any new ones that are not accompanied by the per capita tax. It was moved and carried that all new members accepted by the society in the first six months of the year must pay in full for the year and the second six months, one-half the amount. Dr. Black presented the following resolution:

"Resolved, That it is the sense of the council that under our constitution and by-laws no one can be accepted as a local member of his county society who does not at the same time become a member of the state society."

Dr. Black presented his report on management of the JOURNAL and the same was received and placed on file. Dr. Will presented expressions by the members of the Peoria City Medical Society of commendation and satisfaction on the improved appearance of the JOURNAL.

Adjourned. E. W. WEIS, *Secretary.*

TO SECRETARIES OF COUNTY SOCIETIES.

All officers and members of county societies, and especially councilors and county secretaries, are earnestly requested to report at once any changes of address or location of members of their county societies to the secretary of the State Association, without delay. Prompt reports regarding the election of new members and the election of officers of county societies are especially requested. It is only through reports received from county secretaries that the secretary of the State Society can know of changes taking place in local societies. For the proper transaction of the business of the organized profession throughout the state, it is absolutely necessary that correct and up-to-date information be had regarding all physicians, and especially all members of county societies. The secretaries have already been provided with suitable cards for making such reports. Each secretary is urged to advise the state secretary at once regarding any such changes. Address all reports and communications to Dr. E. W. Weis, Secretary of the Illinois State Medical Society, Ottawa, Illinois.

CRITICISM OF ADVERTISEMENTS.

Illinois Medical Journal, Springfield, Ill.

Mr. Editor:—I notice in your issue for January (page 65) a statement that several questionable advertisements have been dropped. If you have dropped any that are worse than some I find in that issue I am glad I never saw them. For instance, Listerine, Uriseptin, "Liquid Peptonoids," Stovaine, Vitogen, Guaiatonic, Antiphlogistine, Glyco-Thymoline, Probilin Pills, Thermosa, Pepto-Mangan ("Gude"), Gray's Tonic Comp., Hematone, Zematol, Phenol Sodique, etc.

If it is possible to get a filthier brood than that I should like to see the buzzard that could hatch them. I suppose there are some good reasons for carrying them, but I can't understand them. I am very much interested in THE JOURNAL and should be glad to see its advertising pages cleaned up. If it can't live without such advertisements I am willing that it should die. I am further willing that an assessment sufficient to run THE JOURNAL without them shall be levied on the members. I'll pay my part without a murmur.

Please send me a copy of the constitution and by-laws and also the code of ethics of the state society.

If I have written a little harshly I beg your pardon, for I am terribly in earnest about this matter. Yours very truly,

Paris. W. J. J.

PECULIAR SUIT FOR DAMAGES.

To the Editor Illinois Medical Journal, Springfield, Ill.

Dear Doctor:—In the news items of the A. M. A. *Journal* there is a statement that I was sued by a person for performing an unnecessary operation and mutilation of the body, and damage of one dollar was obtained in Judge Gary's court. This appears to read that, in other words, it was a malpractice suit, which it was not. It was for a partial autopsy I performed. Permission was given by the older brother for a postmortem examination, and only a very superficial examination of the wound (which was for an appendicitis operation) was made, but the mother of the dead man had not been asked, and the slight extension of the wound in the abdomen was told her by other members of the family, and she was induced by some attorneys to bring suit against me and the hospital, and damages of one dollar was given by the jury. I merely relate all this so that you will not be misled by the item to give it further publication in the ILLINOIS MEDICAL JOURNAL as if it were a case of malpractice.

I believe the court erred in the case, but I can not afford the time to appeal it for the one dollar, but the principle is wrong. The man was 28 years of age and only lived at times with his widow's mother and the brother who came to the hospital frequently and took charge of everything in the funeral and had a right to give permission for the postmortem examination, but the law seems to be that right only exists in one of the parents, and this old woman thought, I suppose, there was a chance to get out of paying for the surgical services. Not an organ was removed from the body, and the wound in the abdomen, which was previously about 5 inches in length, was only extended 2½ inches further and an examination (postmortem) with the fingers made. It was the first case of its kind that ever came before Judge Gary, and he has been on the bench for about 40 years. Yours, M.D.

COUNTY AND DISTRICT SOCIETIES

CHICAGO MEDICAL SOCIETY.

A regular meeting was held April 4, 1906, with the president, Dr. Charles S. Bacon, in the Chair. The following papers were read in the symposium on "The Prevention of the Acute Infectious Diseases":

1. "The Sources of Infectious Agents, and the Ways and Means of Infection," by Ludvig Hektoen. (See p. 578.)

2. "The Rôle of the Fly and Other Insects in Infectious Diseases," by Dr. Alice Hamilton. (See p. 582.)

3. "The Prevention of Typhoid Fever," by Dr. E. O. Jordan.

4. "The Prevention of the Acute Eruptive Diseases," by Dr. Wm. L. Baum.

5. "The Prevention of Pneumonia," by Dr. Robert B. Preble.

Adjourned.

DISCUSSION OF THE SYMPOSIUM ON THE PREVENTION OF THE ACUTE INFECTIOUS DISEASES.

Dr. Heman Spalding was called upon to discuss these papers. He said: "I did not hear all of Dr. Baum's paper, but what I did hear I am willing to endorse. Dr. Baum has had excellent opportunities to see cases of infectious diseases, and is a man of experience for that reason.

With reference to the rules of the Department of Health governing the period of isolation in cases of infectious diseases, I will say that at the time the rules were made it was a common occurrence for a physician to call for disinfection of premises after so short a period of isolation as one or two weeks. Four weeks was given in the department circular as the shortest period for isolation in cases of scarlet fever. This is, I believe, a safe period in some mild uncomplicated cases, though I agree with Dr. Baum that six weeks is certainly safe.

The following is the department rule in regard to scarlet fever: "Complete isolation should be enforced till all desquamation, or scaling off of the skin is completed, and there is entire absence of discharge from ears, nose, throat, suppurating glands, or inflammation of kidneys. The time required for scaling will vary from four to eight weeks. Mild cases, in which scaling is not noticeable, with absence of ear, nose, throat, kidney and glandular complications, should be isolated not less than four weeks. In severe cases, not less than six weeks should be the period of enforced isolation, and if ear, nose, throat, glands, or kidneys are diseased, prolong the time of isolation until these are well."

If physicians will insist upon six weeks as the minimum time of isolation the department cannot object. A six-week's rule, will, however, be resisted in mild cases of scarlet fever, and some will break quarantine before disinfection is made, who could be easily restrained for the shorter period of four weeks. The period of time to isolate infectious diseases all hinges upon the question of how long the individual case gives off infection. This will vary in different cases. There is no doubt in my mind that some mild cases of scarlet fever, free from complications, can be made safe in four weeks. To make the minimum period of isolation six weeks would entail a hardship on a certain few families, and thus create dissatisfaction and a rebellion against the department for being unnecessarily rigid in restricting their liberty.

I wish to say a few words in reference to the practice of the Department of Health, to which Dr. Baum has objected, of allowing physicians to assume the responsibility in cases of infectious diseases. Personally, I never approved of the

practice. I was opposed to it. I argued against it, and yet the men who established that practice have the best of the argument. They were men of experience in sanitary science and knew what they were doing. In defense of this practice much can be said. The plan of allowing physicians to "assume the responsibility" of enforcing precautionary measures against the spread of contagion from cases of infectious diseases attended by them was inaugurated in 1895. It resulted in a decided increase in the number of cases reported, and the number of premises disinfected. It did away largely with the antagonism of some of the medical profession who were offended at previous harsh and fruitless efforts to compel reports of contagious diseases by prosecutions.

A comparison of the two eight-year periods before and during the operation of this plan, made by Dr. F. W. Reilly, Assistant Commissioner, in 1903, shows an actual increase during the latter period, of 147 per cent. in the number of cases of the contagious diseases reported; of 73 per cent. in the number of contagious disease premises placarded; of 400 per cent. in the number and of 600 per cent. in the area of such premises disinfected, and of 70 per cent. in the number of contagious disease funerals supervised by the department. Thus it will be seen that co-operation of the medical profession has been secured by the adoption of this practice. It is far better to have a written guarantee of a physician that he will enforce proper methods in a case of infectious disease, knowing that the eyes of the Department of Health are upon him, than to have cases hidden from the department, preventing any official effort at isolation.

Experience teaches that if a warning card is posted in all cases, physicians will be influenced by the afflicted families to refrain from reporting cases. This is notably the case in hotels and near business houses, where the posting of a card affects business interests. On the other hand, it is urged against this plan that unscrupulous doctors use the rule to acquire business, with no intention of enforcing precautionary measures. They assume the responsibility in any and all cases to which they are called, knowing that their orders for precautionary measures given to the family will be disregarded. They assume the responsibility in order to secure business.

It often happens that a conscientious doctor will report a case and, knowing the family to be careless or ignorant, request a warning card as the safest method of protecting the public health. The family, indignant at the posting of the card, dismisses the doctor and sends for another, who, to secure the business of the family, assumes the responsibility, acquires a new patient at the expense of a brother practitioner, and at the same time jeopardizes the health of the neighborhood. Again, it is not known by all that a physician is allowed to assume the responsibility in infectious diseases, and when a neighbor learns of the existence of a case and sees no warning card, he forthwith notifies the department of a supposed concealed case. A letter of explanation must be sent in reply to the complaint. This is a daily occurrence.

Since the policy of allowing the physician to assume the responsibility was put in practice, conditions have changed. The practice, itself, has been responsible for the education of the people in the matter of preventing disease. And this is a strong argument in its favor. Physicians have better posted themselves in the manner and methods of destroying infection and safeguarding the public against infectious diseases. A compensation ordinance has been passed which gives the physician a small fee for each infectious case reported. This compensation makes reporting all cases legally binding upon physicians. The Chicago Medical Society has become a large and active organized body disseminating information to the public. Owing to these improved educational conditions, it may be that the practice of assuming the responsibility can with advantage be abandoned. An expression from members of the society upon this subject is desired.

Dr. L. A. Derdiger:—The author of each paper has presented his subject in such a masterly way to-night that there is very little to say. However, it occurs to me that Americans have a reputation in foreign countries of not practicing

preventive medicine, but of aiming to effect a cure after the disease has taken permanent hold of the patient.

Last week, by chance I met a Japanese medical man who is the editor of a medical paper and in inquiring of him something of the practice of medicine in their country he informed me that they teach preventive medicine instead of teaching how to cure disease as we do. I was surprised, in a way, and yet I was not. I asked the doctor if he had investigated our medical schools in this country. He said, "Yes." I said, "Have you taken any courses?" "No." "How have you investigated them?" He said, "I have attended lectures in your medical schools, and your teachers lay more stress on materia medica, pathology, and bacteriology than on preventive medicine." I said to him, "Please tell me what your ideas are on preventive medicine?" To make a long story short, he said, "We teach, in the first place, our freshmen and members of the senior class to expel fear. To go into a sick-room when they are called, and be just as quiet and conservative about telling a patient what his trouble is as can be." I said to him, "Doctor, that is a good point. But we have the same thing here. We teach that, too, and even among our nurses."

Dr. Preble laid stress, at the conclusion of his paper, on the point that the best way to prevent pneumonia is to take in all factors; to keep our minds and bodies as free from excess and all of the things that tend to produce disease as possible. It is certainly a great pleasure to say these few words by way of calling attention to that. In America, we have earnest, ardent workers along scientific lines, which means mind as well as physique. There are men and women here who take an unselfish interest in scientific work, and we teach preventive medicine as well as the Japanese. First, with reference to Dr. Baum's paper, I would suggest that every member of the Chicago Medical Society indorse the plan of building two hospitals in Chicago for the care of the poor who are suffering from exanthematous diseases. Those afflicted with scarlet fever should not be permitted in public places without a physician's certificate certifying that at least one week has expired after the exfoliation ceased. Every child should be thoroughly examined before entering school, whether it has been ill or not. Many young lives have been ruined by careless parents or physicians allowing the child to attend school during a period when rest of body and mind was most essential, instead of cramming and confinement, to say nothing of the underfed and illfed children who ebb out their young existence. We can imagine the results. It may mean migraine, chorea, neurasthenia, hysteria, defective vision or hearing, or a physical and mental wreck. Here is the right place to begin to teach and practice preventive medicine. With reference to Drs. Hektoen and Hamilton's papers, we can only express our gratitude at having this opportunity to learn from the master and his skilled pupils the methods of studying preventive medicine scientifically, and how to apply it practically. I trust that the Chicago Medical Society will be a stimulus for men and women of scientific tastes to follow in the footsteps of the masters and present us occasionally with such definite and very useful ideas on preventive medicine as has been heard here this evening.

Dr. Samuel J. Walker:—It is well-known among all of us that the contagious and eruptive diseases are most prevalent among children. Furthermore, that the public schools are the source of the spread of these diseases more frequently than any other one center. The prevention of contagious and eruptive diseases is extremely important, and I think what Dr. Baum has said about laying down arbitrary rules as to the length of time children suffering from any eruptive or contagious disease shall be kept out of school should be taken up in some more definite and practical way than it is at present. All of us have had instances brought to our notice of children who have returned to school, either in the desquamative stage of scarlet fever or with Klebs-Loeffler bacilli in their throats after an attack of diphtheria, or still carrying the contagion of measles. This is not at all uncommon. It is the case, not only in our public schools, but in

our private schools, and the reason for it, in the majority of cases, is that the physicians in charge of the patients are not careful enough.

Dr. Baum has said that when an eruptive disease appears in one of the public schools it seems to stay with that school throughout the school year, occurring in sporadic cases throughout the year. The cause for it is simple enough. In a case of scarlet fever four weeks is not a sufficient length of time to keep a child out of school; six weeks is short enough, and in many cases it is not long enough. The same may be said with regard to measles. If we make arbitrary rules providing for periods of isolation for the various contagious and eruptive diseases, let us make the isolation long enough to protect other children, especially in the schools. I think this is very important. All of us who have children, and take care of children, see the importance of this all the time. It is very discouraging and very hard upon other children who are going to school, as well as hard upon their parents, when the necessary isolation period is not strictly enforced and contagion results. I sincerely hope that the time is soon coming when children who have infectious or contagious or eruptive diseases will be kept out of school the proper length of time, so as not to needlessly expose others.

Dr. A. W. Baer:—I wish to refer briefly to that part of Dr. Jordan's paper in which he spoke of walking cases of typhoid. We know that most of the trouble is in the lower bowel, and that is where the disinfection is required the most. One of the best disinfectants I know of is a solution of chlorinated soda, of the pharmacopeia, used as an enema, one or two ounces to the pint or quart of water, for those typhoid cases with loose bowels.

Dr. Alfred C. Cotton:—I regret very much to hear Dr. Preble say that there is no use in attempting to disinfect the upper air passages because we could not sterilize the nose, etc. One might almost use the same argument and say that we should avoid keeping these passages clean. He knows that the upper respiratory tract should be cleansed. At any rate, efforts should be made to remove the desiccating secretions which harbor pathogenic organisms. Most of us have seen good results, prophylactically, as far as we can estimate, by proper applications to the upper respiratory tract, or to the rhino-pharyngeo-faucio-oral mucosa, and the use of a tooth-brush with mildly antiseptic solutions, and I believe these are just as popular with Dr. Preble as with anyone else.

Dr. Ludvig Hektoen:—There is evident need for a revision of the rules of this city governing the isolation of patients who have eruptive diseases; but whether to establish an arbitrary rule that isolation in all cases must last a certain time or to isolate patients so long as we have reason to believe that they are infectious, is too important a question to be decided offhand. In many parts of England patients with scarlet fever are not isolated any longer than until desquamation has vanished fairly well, provided there is no abnormal discharge from the nose, from the throat, or from the ears. The impression is growing that in post-scarlatinal abnormal discharges, rather than in the late desquamation, lies the great danger of infection from scarlatinal convalescents. It is quite impossible, at this time, to go into all the details in connection with rules and regulations that should govern the readmission of children to schools. That there is need for thorough revision is clear, and it goes without saying that the final word in all cases should be spoken by the public health officials, rather than by the family physician. The question as to when a person who has had diphtheria should be allowed to go back to school is a difficult one to answer in many cases. We know that one examination of the throat may show that the diphtheria bacilli have disappeared, but, if another examination is made a few days later, diphtheria bacilli may be found in the same throat. So the question is not so simple as it might seem to be, and I do not think it can be settled satisfactorily by arbitrary rules. This, like other similar questions, requires careful consideration by public health experts, in co-operation with practicing physicians.

I wish to make one point in reference to pneumonia. I believe with Dr. Preble that the sputum in pneumonia should be disinfected, because we know that in

pneumonia, the pneumococci present, in the laboratory experiments that we can make with them, distinct evidences of newly-acquired virulence for animals and resistance toward phagocytosis *in vitro*, that is not characteristic of pneumococci that may be isolated from practically everybody's tonsils. For this reason, it seems to me, it is indicated that great care should be taken in the disinfection of the sputum of pneumonia patients, and in preventing pneumonia patients from disseminating droplets of saliva and mucus in such a way that they may be taken directly into the respiratory tract of other individuals.

Dr. Baum's appeal for the erection of hospitals for contagious diseases in different parts of the city must, of course, find a hearty response in each one of us. It may not be out of place to emphasize again that recent action of the City Council has prevented the erection of one hospital of this sort within the last year or two, and as the ordinance governing the location of such hospitals now stands, it is practically impossible under ordinary conditions to secure the establishment of such hospitals. Certainly, the medical profession of the city should unite in overthrowing a needless hindrance like this to progress in the prevention of infectious diseases.

Dr. William L. Baum:—My reason for speaking of an arbitrary minimum period of isolation of scarlet fever cases was because, as the matter now stands, it is largely left to the discretion of physicians, many of whom in the past have yielded to the importunities of the parents of children who have suffered from contagious and eruptive diseases, whom the parents were anxious to have return to school as early as possible. A period of six weeks is not too long, and I am sure it would cover a large per cent. of those who would be a menace to other children, and who are constantly keeping up this endless chain of scarlet fever cases, diphtheria, etc. We know that many of these patients who have been given their discharge at the end of four weeks or so, as a rule, have other complications which necessitate their detention at home for longer periods of time, so that the danger of their returning to school is not quite so great as it is amongst the milder types of the disease. In this connection, I might say that this afternoon I examined a little girl who, when she was admitted to the hospital, had a temperature which was never over 99°. For four weeks she showed no signs of desquamation, but on the thirty-second day she was discharged by an interne because she showed no signs of desquamation. On the fourth day after she was discharged she returned with desquamation; so that it does not always necessarily follow that on account of long absence of any symptoms of desquamation the disease will not occur in that case. It is such cases that are in a measure dangerous to the community at large.

Dr. Preble (closing the discussion):—With reference to what Dr. Cotton has said, I wish to say that I make a clear distinction between cleanliness and sterilization. It is altogether a different proposition to use douches or sprays for the purpose of removing accumulations of mucus, but it is the constant, persistent use of these, with a view to sterilizing the upper air passages, that I object to. I quoted from an authority upon the prevention of pneumonia and sterilization of the upper air passages, and of the oral cavity, who takes the ground that sterilization and disinfection of those passages were absolutely impossible. To use douches and sprays for purposes of cleanliness is a different thing. Dr. Cotton and I have used them for that purpose, but he does not use them with the idea of accomplishing anything in the way of sterilization of those passages, because he knows it cannot be done.

A regular meeting of the Society was held Wednesday evening, April 11, 1906, at 8 o'clock, with the President, Dr. C. S. Bacon, in the chair.

Dr. W. K. Jaques read a paper on "The Standard of Government Meat Inspections" (see page 587), which was discussed by Drs. F. S. Johnson, A. C. Klebs, W. M. Harsha, C. S. Bacon, and, in closing, by the essayist.

Dr. Sanger Brown read a paper on "The Early Symptoms of Multiple Sclerosis, with a Clinical Report of Four Cases."

Dr. Charles A. Elliott read a paper on "The Gram Stain of the Stools as a Method Applicable in the Diagnosis of Carcinoma of the Stomach," and demonstrated a number of microscopic specimens.

Dr. C. M. Paden read a paper on "Somnoform Anesthesia" (see page 595), which was discussed by Drs. Hawley, R. H. Brown, N. M. Eberhardt, C. S. N. Hallberg, Bloch, and Higgins.

DISCUSSION OF DR. JAQUES' PAPER.

Dr. F. S. Johnson:—This paper is certainly of great interest to us from many standpoints, but particularly from that of hygiene, for on this the merits of the question rest. Dr. Jaques has aptly said that if all meat was sterilized there would be little reason for condemning it, but all meat is not sterilized. Much is eaten underdone, and some is eaten raw, especially by convalescents—a particularly susceptible class—and by consumptives, who may thereby infect new areas. There can be no question, then, as to the advisability of avoiding tuberculous meat. There is also the legislative standpoint; a law of the kind in question, framed to furnish protection, is practical only in so far as it provides efficient inspection and deals positively with the disposition of unsound meat. The law should be direct in its mandates and unembarrassed by equivocal clauses. The esthetic side also claims attention. Even slightly diseased meat can not be regarded as food without disgust. The subject is of interest to us not only as individuals, but in its civic, state and national relations. We should be sufficiently interested in the proper conduct of the affairs of our city to determine safe and proper boundaries for them, and when, through lax laws, questionable meat is allowed to be marketed for food it should be a matter of serious concern to us, for we thereby assume a share in the responsibility for the sale of such meat. Dr. Jaques deserves a great deal of credit for bringing this matter to the attention of the profession, and because of his past acquaintance with the limitations of the law, and the difficulties in securing efficient inspection through it, he ought to be well able to inform us in this matter.

Dr. A. C. Klebs:—I had never before quite realized how great was the number of carcasses which were destroyed by the Health Department on account of tuberculosis. Whether meat from tuberculous animals is fit for consumption is a much discussed question. In most instances it is cooked. Rumpel found it to be as well utilized in the dog's intestine as normal meat and Kutscher only observed its more ready putrefaction in the intestine as compared to that from healthy animals. But there are plenty of good reasons why we should have a right to demand that our meat supply should not be derived from infected animals. The meat inspection laws in Germany seem to be a good deal stricter than those just read. For instance, if one lymph gland is diseased, the corresponding part of meat is considered unfit for food in every case. If I understand it correctly, the laws read by Dr. Jaques apply only to beef used for export and the packer has a right to dispose of carcasses, condemned, provided they are not shipped out of the country. I should like to ask Dr. Jaques what becomes of such condemned meat which is returned to the packers.

The question of identity or non-identity of the human and bovine bacillus is by no means settled. There is, however, an agreement between the two contending parties, whose chief representatives are Koch and Behring. Koch said, in 1901, at the Tuberculosis Congress in London: "Considering all these facts, I think I have a right to assert, that human tuberculosis is different from bovine tuberculosis and that human tuberculosis can not be transmitted to cattle." Behring said in 1903: "Those authors who declare in opposition to Koch, that the typical virus of human tuberculosis and the typical virus of cattle tuberculosis are essentially identical, are certainly in the wrong, just as in the same way they would be wrong in declaring as identical all the varieties of tubercle bacilli originating from man." Therefore, we may conclude that the mere academic question remains whether the two types of bacilli are congeneric or not. For practical and preventive purposes, we must use the same safeguards against the one as against the other.

In the discussion of this question of beef condemnation we are apt to loose sight of one point entirely, viz., the tremendous financial drain on one of the most valuable sources of our national prosperity. It is a shortsighted policy for us only to consider what we shall condemn and what not. We ought to go to the root of the evil, to the farms where this tuberculous meat is produced. And in this respect we come to a problem vastly more important to the public health, i. e., the milk supply. What we do for the betterment of the one will improve also the other. Bang, of Denmark, has shown that by artificial feeding and segregation of new born calves, a herd can be cleaned of tuberculosis within five years. With the tuberculin test we also can segregate the adult tuberculous animal from the healthy ones and there is no doubt that, by a systematic, business-like application of these experiences here, we can save thousands of dollars within a short time, while now we destroy them in the tanks of the stockyards. Von Behring's method of immunizing cattle is also available now, having issued successfully from the experimental stage. In one sentence, we must teach the farmer that it pays to prevent, then the stockyards problem will become comparatively simple.

..... (Government Inspector):—I have been in the government service since 1896. I began service in Kansas City on the cattle beds and was transferred to Chicago in 1904. As to the disposition of the condemned carcasses. While the rules quoted by Dr. Jaques are correct, yet they are hardly necessary to control the packers in the matter of the disposition of carcasses. It would be very detrimental to their business to ask for these carcasses and they never object to their being tanked.

Dr. W. M. Harsha:—It was a revelation to me to hear that the government permitted the use of cattle infected with tuberculosis in as many as three places or groups of lymphatics. The doctor did not tell us whether these rules are made by congress or are an arbitrary ruling of the commissioner or of the inspection department. It certainly seems to be rather lax. In addition to that, it is wrong to give to the inspector too much discretionary power. The statement of the last speaker is more to the point; that the self interest of the packer stands in the way of his using this condemned meat. At the present time that, after all, is the greatest safeguard we have against the distribution of tuberculous meat.

The doctor's paper did not deal with milk, but the remarks of Dr. Klebs in that connection were quite appropriate. The place to purify a stream is at its source. If tuberculous carcasses could be tagged, so that each one could be traced to the farm from which it came, it would have its effect on the producer. If, in addition to that, the inspection is made of the herd, we will not only save the expense of raising the cattle, but we will save the children who are destroyed annually through the milk.

I saw some statistics from England and Wales recently, showing that, in general, tuberculosis has decreased at all ages, 45 per cent., while among infants, one year old or less, it has increased over 20 per cent., showing that in children of the milk consuming age there is a very large increase. That would not indicate that the inspection in these countries is any better than our own. However, the place to inaugurate the inspection is in the herd, and the tuberculin test is conceded to be a good diagnostic agent for this purpose.

Another point I did not get enlightenment on is whether these inspectors are civil service employés and whether they have any special training fitting them for this work. The action of medical societies does not influence medical or general legislation, but it does create a public sentiment. This is important, but we must go back of the stockyards to where the cattle are bred if we wish to reach the real source of the trouble.

Dr. C. S. Bacon:—I would like to ask Dr. Jaques to tell us whether he understands that the pure-food bill that has just passed the senate and is now before a committee of the house will have any bearing on this matter of government inspection of meat. This matter will come in under the head of adulterated foods, as described in section 6. I also notice that examinations are to be made

by the Bureau of Chemistry, and I wondered whether this would make any difference in the status of inspection. The pure-food bill has been endorsed by this society, as well as by the American Medical Association, and I am curious to know whether the bill will have any tendency to produce better inspection of meat.

Dr. Jaques, closing the discussion:—I do not believe it was intended that the pure-food bill should affect the present method of meat inspection. I am very glad to say that whatever experience I have had with government meat inspectors and their methods of working has demonstrated that it is perfect as far as it goes. The questions which I wished to raise are these: The rules which govern these men are unjustifiable. Are we willing that these different grades of tuberculous and actinomycotic meat shall be disposed of in the manner prescribed? The best men to discuss this subject are those in the medical profession and that is my reason for bringing the matter before you. With regard to Dr. Klebs' question as to the actual disposition of the meat, that would take a long time to explain and discuss in all its bearings and I must refrain from doing so at this time.

DISCUSSION OF DR. BROWN'S PAPER.

Dr. Charles L. Mix:—We have been taught that multiple sclerosis is to be diagnosticated when we find the symptoms of nystagmus, scanning speech and intention tremor present. This picture has prevailed in all textbooks, but it is not a correct portrayal of the majority of cases of multiple sclerosis. In addition to the article by McKintosh quoted by Dr. Brown, there have been two other notable contributions to the literature of this affection in the last two years; one by Mueller, Struempel's assistant, based on eighty cases, and another by Morawitz, from Krehl's clinic at Tübingen, based on thirty-three cases. In both these articles, the early symptoms of multiple sclerosis are described in the same way. Invariably the symptoms begin as a spastic paresis of the lower extremities. The patients complain of clumsiness in the legs, and of a feeling of heaviness and weight. Very shortly after these symptoms appear, sometimes concomitant, sometimes preceding, are symptoms of paresthesia like those occurring in locomotor ataxia. The knee-jerks are exaggerated. There is no true Argyl-Robertson pupil, but only a slightly dilated pupil that may not react to light. Sometimes there may be hyperesthesia or even anesthesia for all varieties of sensation. There is not the dissociation symptom that occurs in syringomyelia, but there is a reduction of all forms of sensation as in locomotor ataxia. The pain sensation may not be involved particularly.

There may be ataxia. A large variety of these reported cases, twenty out of eighty, began with a slight ataxia and many showed a combination of ataxia and spastic paresis. The ataxia or the tremor is not necessarily confined to the legs, They may be found in the arms also. Another very early symptom which it used to be said did not occur at all in multiple sclerosis is involvement of the sphincters. This is always slight. There is inability to start the stream or inability to control it at the onset.

The modern teaching regarding this affection is quite the reverse of the old. The so-called characteristic symptoms do not occur at all in early cases. Nystagmus is present in only half the cases. Nystagmiform jerkings occur not infrequently, but not true oscillations. The scanning speech is the least reliable of all the signs; only 15 per cent. of the cases have this sign at all. As far as the intention tremor is concerned, it is present in 75 per cent. of the advanced cases, but in only 15 to 25 per cent. of the early cases. We have, therefore, to revise our ideas concerning the symptomatology of this disease.

Concerning the presence of the disease in this country, I think we shall find that it is more prevalent than we have thought. I think I saw a case to-day. A man was brought in who was using a cane. He said that his legs were clumsy and that they have been so for two years. They were weak, heavy, cold and numb. There was marked reduction of all three forms of sensation. Vision was dim, and there was a feeling of constriction about both legs. He also had a girdle sensation. The ocular reflexes were normal. The patellar reflexes were

increased, as were all the deep reflexes. The cremasteric reflex was present. In many of the cases, about 65 per cent., there is abolition of the cutaneous reflexes. The man also had a very slight intention tremor. If he held out his hand the tremor appeared for a moment, and then disappeared. I believe that case to be one of multiple sclerosis. It bears out the ordinary symptomatology of the every-day case, such as portrayed on the chart, exhibited by Dr. Brown.

GRAM STAIN OF THE STOOLS. A METHOD APPLICABLE IN THE DIAGNOSIS OF CARCINOMA OF THE STOMACH.

CHARLES A. ELLIOTT, M.D.
CHICAGO.

So far as is known to the writer, the credit for the idea that a Gram stain of the stools might aid in the diagnosis of carcinoma of the stomach belongs to the Neusser clinic, in Vienna, and is based upon the original work of the first assistant in the clinic, Dr. Rudolf Schmidt. Much original work has been done in the Neusser clinic upon the so-called "lactic acid flora" of the gastric contents in cases of carcinoma of the stomach, and Schmidt has summarized most of this work in an interesting article which appeared in the last number of the "Mitteilungen aus den Grenzgebieten der Medicin und Chirurgie" (15 Band, 5 Heft). Schmidt was the first to successfully cultivate upon a practical artificial medium (2 per cent. glucose agar) the so-called "lactic acid," or "Boas-Opler" bacillus of the gastric contents, in cases of carcinoma of the stomach, and it was by this means that he was able to identify the same bacillus in the stools of such patients. He found that these bacilli not only survive in the intestinal contents, in their passage through the gastrointestinal tract, but that in some cases they actually multiply to such an extent as to exceed the colon group in numbers in the stools, and in some cases, almost totally to supplant the latter.

Since the so-called "lactic acid" or "Boas-Opler" bacillus is Gram-positive, at least Gram-positive when young, and only becomes Gram-negative in part as it grows older, this stain affords a simple means of distinguishing these bacilli from the Gram-negative colon group, which usually predominate in the normal stool. This has given rise to the practical clinical procedure of staining smears from the stools of cases in which a carcinoma of the stomach is suspected, with the idea that such specimens may show a great increase in the bacillary Gram-positive elements, a point which might speak for a diagnosis of carcinoma of the stomach.

The technique used is as follows:

1. Thin smears are made from the stool upon cover slips.
2. Dry, and fix for five minutes in methyl-alcohol, thus dissolving away the fatty substances in the smear which interfere with a clear stain.
3. Stain in anilin oil gentian violet for five minutes. Wash.
4. Treat the specimen with Gram's iodin, potassium iodid mixture, until it becomes a deep purple color. Wash.
5. Decolorize in 95 per cent. alcohol, until almost all color has disappeared. Wash.
6. Counter-stain in a weak aqueous fuchsin solution. Wash, dry, and mount.

The staining is best done in watch glasses, and a strong light is required in examining these specimens, since with a poor illumination it is difficult to distinguish between the violet color of the Gram-positive and the red of the Gram-negative bacteria.

Using the above method, the varying stools of a presumably healthy individual have been systematically and persistently watched during the past winter, and also numerous examinations of the stools of the ordinary run of cases in the medical wards have been made, especial attention being paid to the Gram-positive bacilli. For our purpose, the Gram-positive cocci, spores, etc., that occur in stools, are disregarded, and attention paid only to the bacillary elements.

In such "normal" specimens, one sees Gram-positive bacilli of all morphological varieties, large and small, thick and thin. As far as the proportion in

actual numbers of Gram-positive to Gram-negative bacilli is concerned, one may recognize a great variation, which is still within the normal range. In the normal stool, the Gram-negative colon group usually far outnumbers the Gram-positive elements, hence the normal stool is a "Gram-negative stool." In a typical "Gram-positive stool," as is often found in carcinoma of the stomach, one recognizes not only the numerical preponderance of Gram-positive elements, but also the fact that these bacilli are, for the most part, morphologically uniform.

One comes to look upon the uniformity in size and shape of the Gram-positive bacilli as a factor which is quite as characteristic of a typical "Gram-positive stool" as is the mere presence of a greater number of Gram-positive over Gram-negative bacilli. One may see normal stools in which the Gram-positive elements seem to be quite as numerous as, if, indeed, not more numerous than, the Gram-negative elements, yet here one finds that the great variety as to form and size of the Gram-positive elements is in great contrast to the uniformity which is found in the typical examples of Gram-positive stools.

Schmidt recognizes three types of Gram-positive stools:

1. "Lactic acid bacillus type." The bacillary Gram-positive elements are thinner than the colon bacillus, and vary greatly as to length, are without spores, and are non-motile. They show here and there areas in the bacilli which are Gram-negative. Upon staining such fresh specimens with Lugol's solution, the bacilli stain yellow and show granules here and there in the protoplasm of the bacillus. By this means, these bacilli may be identified without resorting to culture methods. They may be cultivated upon a two per cent. glucose agar. These bacilli have the same characteristics as the bacilli found in the coffee-ground stomach content of cases of carcinoma of the stomach, and their presence in the stools has the same diagnostic value as their presence in the stomach content.

2. "Pseudo-colon bacillus type." Showing bacilli which are morphologically the same as the colon group, but are, however, Gram-positive, and can not be cultivated. This stool picture occurs in catarrhal conditions of the large intestine, especially where the stools are very acid, i. e., a catarrh due to chronic tubercular process, or a carcinoma of the intestine, etc.

3. Type of Gram-positive, plump, bacilli, in long chains. These bacilli stain blue with Lugol's solution, and can not be cultivated. The stool picture occurs in chronic catarrhal inflammation of the lower bowel, especially when associated with atony and flatulence. The "lactic acid bacillus type" (type 1) is readily to be distinguished from the other types by the morphological and tinctorial peculiarities of the bacilli, and it is this stool which is of especial interest in the diagnosis of carcinoma of the stomach.

During the past winter I have had the opportunity of examining the stools of twenty-five patients in which the possibility of a carcinoma of the stomach was especially to be considered, and in which the diagnoses were subsequently confirmed, either by postmortem, by operation, or by the subsequent course of the cases. Of these 25 cases, 17 showed Gram-negative, 6 Gram-positive, and 2 almost exclusively Gram-negative stools, as tabulated below:

	Number of cases.	Gram-positive.	Gram-negative.	Almost exclusively gram. negative.
Carcinoma of stomach*	6	5	1	..
Carcinoma of stomach	1	1	..	..
Carcinoma of splenic region (not primary of stomach)*	1	..	1	..
Benign stenosis at pylorus	4	..	4	..
Gallstones*	3	..	3	..
Chronic gastritis	2	..	2	..
Chronic gastric ulcer*	1	..	1	..
Acute gastric ulcer	1	1	..	..
Cirrhosis of liver*	2	..	1	1
Perihepatitis and perigastritis*	1	..	1	..
Myocarditis	1	..	1	..
Pernicious anemia	1	..	1	..
Chronic nephritis	1	..	..	1
Total	25	7	16	2

* Diagnosis confirmed either at postmortem or by operation.

In the 16 cases showing Gram-negative stools, this fact was considered a point which spoke against the probability of a carcinoma of the stomach being present, and of this group only 1 case was a case of carcinoma of the stomach. Of the 7 cases showing Gram-positive stools, this fact was considered a point speaking in favor of a diagnosis of carcinoma of the stomach, and of this group 6 were carcinomas of the stomach, and 1 an acute gastric ulcer. The list contains 7 cases of carcinoma of the stomach, 6 of which showed Gram-positive stools (type 1), and 1 a Gram-negative stool. Two of them showed almost exclusively Gram-positive bacilli, i. e., the "lactic acid" bacillus seemed to have almost totally supplanted the colon group.

The case of acute gastric ulcer showing a Gram-positive bacillus stool flora also showed an exclusively Gram-positive bacillus flora in the vomitus. The bacilli of the vomitus seemed to be, morphologically at least, identical with the Gram-positive bacilli of the stools. They were rather short, plump, Gram-positive bacilli.

This case is of interest especially because it seems to point to the truth of the statement that the flora of a pathological stomach content may still be present, and in some cases even predominate in the flora of the stools.

In the two cases showing an exclusively Gram-negative stool flora, this finding was considered to be a point which spoke decidedly against a diagnosis of carcinoma of the stomach. One of these cases was referred to Dr. William E. Morgan for operation, with a diagnosis of carcinoma of the stomach. The patient was vomiting persistently, and the passage of a stomach tube was out of the question. There were albumin and casts in the urine. A Gram stain of the stool was made, which showed an exclusively Gram-negative stool. This fact was considered a point which spoke decidedly against the probability of a carcinoma of the stomach being present. Dr. Morgan refused to operate, considering the gastric phenomena to be due to uremia, and the subsequent course of the case shows that his diagnosis was correct.

The second exclusively Gram-negative stool case was a case of cirrhosis of the liver in which the possibility of a carcinoma of the stomach was to be considered. The exclusively Gram-negative stool was considered to point decidedly against a diagnosis of carcinoma, and the post-mortem established the diagnosis of cirrhosis.

Neusser goes so far as to say that one can exclude carcinoma of the stomach in cases showing an exclusively Gram-negative flora of the stools. Atypical Gram-positive stools, i.e., differing from the "lactic acid bacillus" type (type 1), may be found in other conditions than carcinoma of the stomach, as has already been indicated. According to Neusser, typhoid stools are often Gram-positive, and he relates a case of a Gram-positive stool being present in a greatly emaciated and cachectic woman who was suffering from a carcinoma of the uterus. Her stomach content showed no hydrochloric acid after a test meal. Schmidt considers the presence of a Gram-positive coccus stool, especially when the cocci occur in clumps, as an indication of an ulcerative process, such as, for instance, an ulcerating carcinoma, or a tubercular ulceration of the intestines.

In summarizing, I wish to emphasize the following points:

1. A Gram stain of the stools may throw considerable light upon the diagnosis of abdominal cases in general, and especially is this true where the diagnosis lies between a gastro-intestinal process, on the one hand, and a pathologic process occurring in some other abdominal organ, on the other. While a Gram-positive stool is in no way pathognomonic of carcinoma of the stomach, yet it very frequently occurs in this condition. The very limited number of these cases that have come under my personal observation, in which the diagnosis has been substantiated by post-mortem or operation, does not allow of a more definite conclusion than this, yet I feel certain that the presence of a typical Gram-positive stool (type 1) is a sign which may be used to advantage in establishing a diagnosis of carcinoma of the stomach, and especially in cases where the use of

the stomach tube is contraindicated. It is a good, simple, and practical example of applied bacteriology.

2. Schmidt suggests that in cases in which an old gastric ulcer is known to exist, a Gram stain of the stools may be made from time to time, with the idea that when a carcinoma develops upon the site of the ulcer, it may manifest itself by a change in the stool flora, which would be detected by a Gram stain, and thus lead to an early diagnosis.

3. An exclusively Gram-negative bacillary stool, while uncommon, yet speaks very decidedly against a carcinoma of the stomach being present.

DISCUSSION OF DR. ELLIOTT'S PAPER.

Dr. Parker:—There is a very practical side to this question. In the sixteen cases, there was no carcinoma of the stomach that could be determined more accurately by examining the stomach contents. In cases where it does occur, we must wait for stagnation, and that is a very late stage of the carcinoma and the hydrochloric acid has then long since disappeared and the chance for operation has passed. Of course, in the stagnation mass we find the lactic acid bacillus, and we may get it in a simple obstruction, and again, on the other hand, we may have obstruction of the stomach, with vomiting, much hydrochloric acid and therefore no Gram stain.

DISCUSSION ON DR. PADEN'S PAPER.

Dr. Clark W. Hawley:—I suffered for two years with nervous prostration and the only comfort I could get at times would be through the use of chloroform. So far as I could recognize there is no difference between the taking of somnoform and chloroform, except that anesthesia results more rapidly from the former. The odor and taste of the two are very much alike. I tried very hard to keep track of the sensations, but it was impossible. The feeling of falling asleep is so sudden that I realized no particular sensation, except the smell and taste. The coming out from under the anesthesia is very sudden and there are apparently no after effects. Quite recently I had a child, about eight years of age, to whom I hesitated to give a general anesthetic. The anesthesia from bromid of ethyl is so short that I knew it would be insufficient. The child had a large polypus in the middle ear, so situated that it was impossible to remove it under a short anesthesia. The tonsils were enlarged and there also were adenoids. I wanted to remove all these structures under one anesthsia. I had Dr. Paden give somnoform and I was very much pleased with the result. The operation on the ear took some little time. Then I removed both tonsils and the adenoids. I did not feel that I had to hurry. I went from one operation to the other without undue haste as would have been the case under bromid of ethyl.

The peculiarities I noticed in the giving of the anesthetic were that the anesthetizer was very little in my way. He just gave sufficient somnoform to keep the patient anesthetized. That is very desirable because the patient always gets some oxygen between whiffs. It seems to me that must relieve the dangers of giving an anesthetic. There is no cyanosis.

Another case in which somnoform was used was one of tumor of the neck. About the same thing was gone through with as in the previous case and with the same results. I believe somnoform is a most ideal anesthetic for short operations.

Dr. R. H. Brown:—I have had but little experience with somnoform. I was present during the operations Dr. Hawley mentioned. What I particularly like about the anesthetic is that it can be removed and given again repeatedly. I have been using bromid of ethyl considerably, but I consider it a very dangerous anesthetic. I have been afraid of it for a number of years. If, during its administration, the patient is allowed to get a few whiffs of air and the anesthetic is again used, serious results are likely to follow. I have given it three or four hundred times, and I have had five or six serious cases where the cyanosis was very marked and where respiration stopped entirely. I have had one death from bromid of ethyl. The respiration stopped first and the circulation immediately afterward, and although artificial respiration was kept up for a long time and

everything was done to stimulate the heart there was no effect. I have used somnoform in two cases of adenoids, and in both cases it was necessary to readjust the gag, but it did not interfere with the anesthesia in any way.

I can, however, hardly accept the rosy reports of one and a half million favorable cases. I fear that, when all reports are in, we will hear of some fatalities, but that is also true of any other anesthetic. The inhaler Dr. Paden uses is a very complete one, but it has one defect, from the standpoint of a throat operator, and that is that the gag between the teeth must be entirely in the mouth, so that it gives us no chance to hold it outside. It is possible, however, that another form of gag can be used.

Dr. N. M. Eberhart:—There are many instances in office practice where it is necessary to subject the patient to an operation of not more than ten or fifteen minutes' duration, and that are not serious enough to warrant sending to a hospital. It is in such cases that somnoform is particularly useful. The patient can leave the office almost immediately after the operation, which is not the case with other anesthetics. In a case of hemorrhoids that I operated on some years ago, the patient had a heart lesion. At that time chloroform and ether anesthesia was used, but the heart lesion had progressed considerably, and, when I operated again a few weeks ago, I concluded to try somnoform, having first tried it on myself and being very much pleased with the result. The patient was anesthetized completely after about nine inhalations, and remained perfectly quiet during the ten minutes I operated. Before I could get my instruments out of the way the patient was ready to leave the office. I think it is an ideal anesthetic for these short operations. A second case, on which I had also operated previously, was a very nervous patient, who refused operation rather than take chloroform again. The patient was under the anesthetic (somnoform) about fifteen minutes and did not complain of any after effects.

Professor C. S. N. Hallberg:—I do not like the name "somnoform," applied to a mere mixture of ethers. There are a number of proprietaries with names quite similar, but entirely different in character. It would be well to have a more scientific name for this mixture. I would like to ask the doctor if he has tried anesthol, a preparation brought forward by Willy Meyer about two years ago, a mixture of ethyl chlorid, chloroform and ether. These mixtures appear to approximate the so-called A. C. E. mixture, and, if we compute the specific gravities of these various ether mixtures we shall find that they approximate the specific gravity of one. Any mixture which is made up of ether, which is exceedingly light, and an haloid ether like ethyl bromid, which is exceedingly heavy, will have a mean specific gravity of one. I believe that this has something to do with the volatility ratio of these mixtures.

For the same reason, employing a substance of high specific gravity like ethyl bromid, which is much heavier than chloroform, would suggest danger. Here may lie the danger in the use of such substances.

Dr. Bloch:—I have had occasion to use somnoform in about twenty-five operations, but I never used a gag, and the patient always went to sleep in half a minute. I have also used somnoform preliminary to ether or chloroform anesthesia and found it considerably more rapid than the nitrous oxid method. The longest period I have given the anesthetic was fifteen minutes, during which time a curettement was done and a few hemorrhoids were removed. I used only about 10 c.c. of the mixture.

Dr. Higgins:—I have given somnoform for operations on the eye with great success. One operation was an iridectomy, but I would never recommend somnoform for such an operation because the palpebral reflex is not lost completely and the eye does not remain still.

Joint meeting of the Chicago Medical Examiners' Association and Chicago Medical Society, held April 25, 1906, Dr. E. L. Hayford, President of the Chicago Medical Examiners' Association, in the Chair. Dr. Robert H. Babcock read a paper entitled "Chronic Myocarditis from the Standpoint of the Life Insurance Examiner."

DISCUSSION.

Dr. William J. Butler:—There are two or three points of special interest in Dr. Babcock's paper which need further comment. The one in particular that attracted my attention is with reference to the difficulty of determining the cardiac area in a corpulent man. There is more than the factor of thickness of the chest wall which interferes with this. In a corpulent man there is usually a greatly distended condition of the abdomen. The abdominal organs are more or less encroached upon, with a tendency to push the cardiac area upward and displace the heart. We have, likewise, in these fleshy men a more or less fatty layer over the heart, which is sometimes very considerable, especially over the right heart, invariably leading to considerable dullness under the sternum. Sometimes even to the right border of the sternum dullness will be found. These conditions undoubtedly are frequently responsible for the apparently large cardiac area in some of these corpulent men. The apex beat is too frequently wanting altogether as an index to the left limit. As a consequence, one must depend entirely upon percussion in many cases, which presents the difficulties already mentioned by Dr. Babcock. Before leaving the fatty layer which frequently overlies the heart in such a patient, I wish to call attention also to the influence of such a fatty layer upon the integrity of the heart itself. Where this is considerable, not infrequently there is infiltration or a tendency to infiltration of the cardiac muscle itself, and, as a result, two factors are operating in disturbing the integrity of the heart muscle. Whatever arterio-sclerosis may exist, in the coronary arteries and its branches, and likewise the infiltrations of the fat that surrounds the heart, leading as it does frequently to parenchymatous changes, or to direct fatty changes, in such men not infrequently produce a slow pulse, which may be of high tension, dependent upon the degree of the arterio-sclerosis that exists.

Another factor in these cases is that the heart sounds are often the most important in determining arteriosclerotic changes, where the same is not evident in the arteries. Attention has been called to this by Dr. Babcock. The second aortic sound, which is so characteristic of the arteriosclerosis, at once determines its presence. Concerning the murmurs that are sometimes heard, a heart that is put under pressure by physical exercise will sometimes develop murmurs. I am inclined to doubt, however, that these murmurs ordinarily indicate a relative insufficiency. If the heart chamber is put under the stress of increased blood pressure, the fact that it contracts more rapidly, sometimes making the valves competent, will lead to a murmur, from the fact that blood is forced through with greater speed. That is one of the theories in the production of accidental murmurs. The wonder frequently is why we do not get a murmur in the cardiac cycle instead of a sound. A heart emptying itself methodically and regularly at every cycle will not produce this murmur.

Dr. Joseph M. Patton:—Illustrative of Dr. Babcock's belief that insurance companies pay little attention to the results of a medical examination, except in a clerical connection, I am reminded of a man whom I examined twenty years ago for insurance, who had a typical, ordinary, well compensated mitral regurgitation. The presence of a murmur was reported, and a statement of all associated conditions made, and the man recommended for insurance. He was promptly turned down. Subsequently another examiner for the same company passed him, and that man had a poor opinion of my ability as an examiner.

Again, illustrative of Dr. Babcock's remarks about basing the acceptance of risks more on general principles than on careful detailed medical examination, I am reminded of a man I had under treatment for chronic myocarditis. He applied for a large amount of insurance. He was an active business man, with large interests. He stated that he was under my treatment, and the company applied to me for information as to what he was being treated for, and what his condition was. I told the company I was not in their employ; neither was I acting as their clerk, and therefore I declined the information. He gave the company permission to get information from me. I asked the company if they were willing to pay my fee. They said they were not, and that I was acting against the best

interests of the patient. I did not give them the information, and the man was rather indifferent to it, apparently; but in less than a week after that they offered to insure him for double the amount of his application, without any further information. So it goes to show that on general principles they would be willing to accept such an applicant without very much question.

The points brought up by Dr. Babcock in regard to the condition of the heart are all very apropos to the medical examiner's situation. I believe myself that the character of the cardiac sound is one of the greatest importance, and I think the difference in the two sounds at the apex is rather due to a loss of intensity of the first sound, which, with the relative rise in the pitch, makes its relation to the second sound different from the normal. Relatively, it increases the pitch, apparently, of the second sound, and the two sounds are brought nearer together in their general length and character.

In regard to the remarks of Dr. Butler as to the production of murmurs, I believe that Dr. Babcock is absolutely correct in what he said. It is not apparent how a heart, which is working properly, even if it be under increased pressure, with blood which approaches the normal in consistency and general physiological characteristics, can produce a murmur in the chambers of the heart, providing the valves and openings are normal. If one will take a case of chronic myocarditis, which has developed a certain amount of dilatation of the left ventricular cavity, with a relative mitral leak, and put the patient under proper conditions, and under proper treatment to reduce that dilatation, he will observe the disappearance of the murmur as the dilatation subsides, and observe its reappearance under proper conditions of strain afterwards, and he can readily appreciate that this must be so in connection with the murmur which the doctor has described.

Dr. William S. Royce:—I believe the old line insurance companies have a price for insurance based upon the fact that if they can go out and insure all men they could get along and make money without any medical examinations. But we all know that if that examination was dispensed with the insurance companies would not get the average risk, but the sub-standard risks would be the ones to seek insurance, so that, as has been said, the medical examiner is the bulldog on the bank which keeps out the bad risks. In regard to a certain class of risks which Dr. Babcock spoke of, I would like to have his opinion regarding them. He spoke of a class of risks, such as office men or board of trade men, who lead strenuous lives, having a heart at 40, 45, or 50 years of age, which is the subject of fatty infiltration and is weak. I would like to ask him if he does not think that nearly all such men in their younger lives were very active; that they were college men, men who have made themselves active in athletic work, etc., in their younger days at college, and, in consequence, have developed a certain hypertrophy, the same as a blacksmith does of the biceps, and after a change of life in which they do not use the muscles, the same condition takes place that occurs in the biceps muscle, namely, it becomes flabby. And so the heart may become flabby, fatty or weak. In other words, such a man has developed more heart muscle than he needs to use in later life, and any muscle which is developed and is not used, later becomes flabby. Is not the same true of the heart muscle? We have what is known as intermittent heart upon fatigue, and this intermittence is an indication of a skip in the beat or a rest in the rhythm of the heart, simply arrest due to fatigue. If you ask such a patient to lie down for a few hours the heart will become regular, rested, and normal, as it were, in rhythm.

Dr. Babcock (closing the discussion):—Dr. Butler's remarks with reference to the influence which the corpulent abdomen has upon the area of cardiac dullness are very appropriate. I recognize it constantly in my work. I would like to give the doctor a practical point in this connection. If he will give such a man four ounces of the compound infusion of senna and examine him after it has ceased operating, he will find it easier to determine the cardiac outline. That has frequently helped me out. With reference to the fatty overgrowth of which the doctor spoke, if Dr. Butler will recall that I confined my remarks concerning the

area of the cardiac dullness to the left border, because it is the one which it is important for us to determine in most cases. When the area of cardiac dullness cannot be accurately outlined, if you wil note the character, the accentuation, the quality of the aortic second tone, and pulse tension, and you find the aortic second tone, ringing and accentuated, and you find hypertension, you may safely infer that there is cardiac hypertrophy. I believe that will hold water, will it not, Dr. Patton?

Dr. Patton:—I think so.

Dr. Babcock:—And if there is cardiac hypertrophy in a man who is past 40, still more 45 or 50 years of age, without valvular disease, you may be pretty certain that he has chronic myocarditis.

With reference to the murmur of which Dr. Butler spoke in the aortic area, I agree with him that the one indicative of arteriosclerosis is a rasping murmur. I did not say anything about the murmurs which ordinarily exist. If the examiner recognizes any aortic systolic murmur and records it, the patient is at once a sub-standard risk. I am talking about cases that ordinarily pass as first-class risks, but which, in reality, are not first-class risks.

I wish to thank Dr. Patton for his remarks corroborative of what I said, and I was especially pleased to hear what he had to say about the two cases cited by him. I have long maintained that if a man of the experience of Dr. Patton recognizes a case of mitral insufficiency and recommends the applicant for insurance to the insurance company, the company ought to accept him. The very fact that the company does not proves that the examiner is a mere recording clerk. And what the doctor said of their willingness to accept a case of chronic myocarditis is very true, because I know it has been done.

With reference to Dr. Royce's question concerning hypertrophy of the heart in those men who were once athletes in college, I am not willing to accept that as an explanation of the condition of their heart. I believe it is injurious for college men, and especially men of large physique, who have led an active outdoor life, to suddenly subside into a sedentary business life, with very little exercise, not to keep up exercise, particularly a certain amount of it. In these men metabolic changes are active; they are likely to be hearty eaters, and if they do not want injurious results to come about from sedentary occupations, they must keep up a certain amount of exercise. I think the hypertrophy of the heart which we hear about in athletes, although it does exist in some cases, is apt to be exaggerated. It is purely a compensatory hypertrophy in a way, and I do not think that degeneration of the myocardium from disuse, so to speak, is the factor.

Dr. Joseph M. Patton read a paper entitled "Some Features of Chest Examinations of Interest to Life Insurance Examiners."

SOME FEATURES OF CHEST EXAMINATION OF INTEREST TO LIFE INSURANCE EXAMINERS.

JOSEPH M. PATTON, M.D.

CHICAGO.

Considering the nature of the subject assigned me, it is hardly necessary to apologize for the academic character of these remarks, for it is not possible to present a learned discussion of this subject as the relation of the findings of an examination of the chest to the insurability of an individual is based on the exercise of principles of physical diagnosis, which are academical in their relation to the intimate nature of the processes of disease, which the proper exercise of such principles may or may not discover. It is understood that these remarks are not intended to deal with the relation of sub-standard risks to short term insurance. Therefore, the prognostic features of this latter subject, which postulate a deeper and more comprehensive knowledge of the individual case, will not be considered, and I will confine myself to the points of interest in the ordinary routine examination of the chest. The purpose of this examination is, as far as the insurance department is concerned, the establishment of a condition of health,

which is often more difficult than the diagnosis of diseased conditions. It involves the correct interpretation of the signs of incipient disease, and correct judgment as to the importance of slight deviations from classically normal conditions. Failure in either of these faculties may precipitate upon the examiner the judgment of a superior, whose *post hoc* knowledge is literally figurative and correspondingly adaptable to any demands the situation may give rise to.

INSPECTION OF THE CHEST.

Inspection of the completely bare chest is of great value for our special purpose. Both direct and oblique light should be employed, as the latter is of special value in detecting local variations in the movement of the chest walls such as may result from pulsations and retractions. Special attention should be given to the size of the chest. Great variations occur within the limits of health, in respect to the size of the chest in relation to general physique and weight. Unusually small chests are likely to be associated with a history of rickets or with obstructive conditions of the upper respiratory tract, while large chests suggest the possibility of emphysematous conditions.

The Shape of the Chest.—Leaving aside the many variations of childhood, we find two types of interest, the paralytic thorax and the barrel-shaped chest. The former, with its minor degrees of flat chest, is generally but erroneously regarded as characteristic of phthisis. The stooping shoulders, angular scapulæ, prominent clavicles, sharp costal angles, while indicative of deficient lung capacity, are often present with positively healthy lungs. The barrel-shaped chest, which does not at all resemble a barrel, is infantile in conformation. The obtuse costal angles, high shoulders, short neck and increased antero-posterior diameter is characteristic of increased capacity of lung cells, but not of functional ability. The nutrition of the chest walls is readily determined by inspection through the prominence of the bony structures, independently of the paralytic type of chest. Supra or infra clavicular depression, aside from other changes in the chest walls, suggests apical tissue changes of some sort.

Deformities of the Chest.—Aside from the symmetrical variations just considered, and also those deformities produced by rachitis or spinal curvatures, we have local deformities which result from pleurisy, general or local, lung cirrhosis, chronic pneumonia, chronic phthisis, localized chronic bronchitis, tumors, or malignant disease. These cause flattening of a portion of one side of the chest walls, sub-clavicular, axillary, infra-axillary, infra-mammary or sub-scapular, as the case may be. Compensatory action of the uninvolved portion of the lung, or of the opposite lung, emphasizes these local changes. Inspiratory intercostal depression is usually more or less marked over portions of these areas, but is not always proof of pleural adhesions. Inspiratory depression in the axillary region is seen with healthy lungs.

Prominence of a portion or the whole of one side of the chest is seen in pneumothorax, pleural effusion, malignant disease, and sometimes from emphysema. In the two former the intercostal depressions may be effaced, but rarely if ever bulge. In the latter, local inspiratory depression may be observed. The distinctly local prominences are likely to be due to aneurism, tumor of the chest walls, lungs, mediastinum, or thoracic glands, tubercular abscess of the ribs or sternum, or to empyema necessitatis. Prominence of the precordial region is very common in moderate degree with healthy chests. It is not important unless associated with signs of cardiac disease. Absence of apex beat may indicate emphysema; forcible apex beat may mean contraction of pleura or lung, while displacement of apex beat is a most valuable sign of pleural effusion.

Respiratory Movements.—The normal type of breathing may be exaggerated by disease, such as the diaphragmatic type by bronchial asthma or emphysema, while the costal type is increased by interference with the action of the diaphragm by abdominal fluid, tumor, cirrhosed liver, leukemic spleen, and in some cases of spasmodic asthma. Diminished expansion of one side, if associated with distention of that side, is indicative of pleuritic effusion, pneumothorax, or tumor of lung or pleura. If loss of motion is associated with retraction, it is indicative

of chronic pleurisy, cirrhosed lung, chronic phthisis, or occluded bronchus. Loss of expansion of one apex is a classical sign of tuberculosis of that part. It is often appreciated best by standing behind the subject and looking down over the clavicles with the subject's head inclined forward. Loss of motion of one side may be due to pressure or inflammatory conditions below the diaphragm, as in disease of the liver, spleen, sub-diaphragmatic abscess, chronic cholelithiasis, peritoneal tuberculosis, etc. Unilateral paralysis of the diaphragm is also a cause.

Increased expansion of one side of the chest is compensatory to loss of function in the other side from very many causes. The presence of intrathoracic conditions affecting the functional integrity of the lungs and interfering with the action of the diaphragm may be suspected by careful observation of the Litten phenomenon, which is always present in people who can breathe deeply, except in the obese. It is modified or absent with intrathoracic disease, and is not affected by fluid or solid tumors below the diaphragm.

Dyspnœa occurring with slight exertion is suggestive of either heart or lung disease. Inspiratory dyspnœa may mean obstruction of the upper air tract or may occur with myocardial degeneration. Expiratory dyspnœa is indicative of asthma, emphysema, or chronic bronchitis. Inspiratory depression of the axillary or sub-clavicular interspaces may accompany dyspnœa if the lungs do not expand readily. Rhythmical disturbances of breathing are not of special interest in this connection.

Pulsating areas about the chest may be from the heart, pulsating empyema, aneurisms, or venous pulsations. In the neck, a presystolic pulsation in the external jugular, or in the bulb between the sternomastoid attachments is often seen in health. Systolic pulsation may mean tricuspid regurgitation, provided the vein fills at once from below, when emptied by stroking upward. Transmitted impulse from the carotid, like other causes of venus pulsation, will not show if the vein is emptied upward.

Palpation of the Chest.—Bearing in mind that tactile fremitus varies much within the bounds of health, that it is greater in men than in women, in adults than in children, with low than with high pitched voices, that it is more marked in the upper than in the lower portion of the chest, greatest over the right apex, and somewhat more marked all over the right than the left chest; that in women, children, and fat people fremitus is often not to be felt, we may obtain valuable information from increased, diminished, or absent fremitus. While the classical distinction of our text-books that increased fremitus depends upon increased density of tissue may be regarded as abstractly true, we will often find the fremitus most marked over the healthy side, when it is compensating for a marked interference with the entrace of air to the opposite side. This is apparent in persons with thin chest walls where the greater tension of the residual air in the compensating portion results in vibration being conducted to the chest walls with greater facility. Therefore, we should guard against taking it for granted that increased fremitus over a portion of the lung necessarily means partial consolidation. When pleural friction is dry and grating it may be palpated in the axillary regions. Likewise pericardial friction may be felt about the third or fourth interspaces to the left of the sternum. When distinct, these signs are valuable, because they are simulated by no others except râles which are large enough to be palpated, and these are very rare and of a different feel.

Tenderness may be present over any portion of the chest in neurotic individuals, but it is superficial and not deep. Phthisis causes tenderness over the upper and anterior portion most frequently, while in intercostal neuralgia the tender points are limited to the exit of the nerves involved. Tenderness may be present over the precordial region, and in the subscapular region in cases of fermentative dyspepsia.

The palpatory signs of heart and arterial diseases are very important, but will not be considered here.

PERCUSSION OF THE CHEST.

This is one of our most valuable and the most abused methods of examination. It has been claimed that the difficulty with many examiners was their inability to be at once the active and passive agent, and that discrimination of pitch of sound is unnecessary as judgment of intensity and resistance of tissue will suffice. It is not apparent how one's judgment of intensity can be accurate without some knowledge of pitch. A musical ear is certainly an advantage. Bearing in mind the normal dull areas of the heart, superficial and deep, of the spleen, liver, and the modified normal dullness of the right apex, we may study the character of the percussion note in the rest of the lungs. The determination of the mobility of the borders of the lungs by outlining the excursion of the borders between expiration and deep inspiration is important in detecting pleural adhesions. Complete absence of mobility is pathological. Continued percussion over one portion of the chest, especially if it is approximately sound, will increase the intensity of the note and lessen the pitch. This has been described as due to the "lung reflex," or the faculty of the lung for developing a local state of emphysema on continued initiation of the surface of the chest.

The increased excursion of the borders of the lungs is important in large lunged emphysema when the tissues of the chest wall are too thick to allow of discrimination as to the intensity of the note. In the senile type of emphysema the hyperresonant quality of the note itself is of most importance.

AUSCULTATION OF THE CHEST.

There are two difficulties that frequently appear in auscultating a chest. They are mainly due to desire on the part of the subject to present the best condition possible. These are the occurrence of muscle sounds, and an unnatural, inefficient type of breathing. If the subject holds himself very erect and pouches his chest like a pigeon, there will often be heard peculiar sounds caused by muscular contraction, and these may be mistaken for intrathoracic adventitious sounds. They are most often heard over the pectoral or the trapezius muscles. I have known an applicant to be rejected because of the occurrence of these sounds. It is very difficult to get some persons to breathe deeply and naturally. We can overcome this difficulty by making the subject count as long as possible on a single breath. The inspiration following is usually satisfactory. Coughing is another way to produce a deep inspiration, and is especially useful when we wish to bring out deep-seated, indistinct râles, as in incipient apical tuberculosis. It must not be forgotten that the normal breath sounds above the right clavicle, the spine of the right scapula, and in most instances just below the right clavicle are slightly broncho-vesicular in type, sufficiently so to be indicative of disease if heard elsewhere. The breathing at the base of the right lung posteriorly is often more feeble than in the same region of the opposite side in healthy chests. At times the whole right side will show more feeble respiration. Interrupted or cogwheel breathing, when heard all over the chest, may be due to nervousness, cold, or fatigue, and will disappear if such causes are removed. When it is localized in the lower portions of the chest it may be due to local bronchitis, peribronchitis, or to habitual faulty type of respiration. In the upper portion of the lungs it may indicate tubercular processes.

Exaggerated vesicular breathing is found in children and in adults with flexible chest walls, and the compensatory form in any case where one portion of lung is doing extra work vicariously. Diminished vesicular breathing occurs from fluid or air in the pleural cavity, emphysema, bronchitis, thoracic pain, obstruction of the upper respiratory tract, paralysis of muscles of respiration, and from interference with the action of the diaphragm. The causes of broncho-vesicular and bronchial breathing need not be considered here.

Râles are more easily recognized than slight changes in the respiratory murmur. They are not, however, always to be regarded as evidence of disease. In persons not in vigorous health who breathe imperfectly, in many healthy persons from 25 to 40 years of age, and in the majority of persons after middle life, fine subcrep-

itant râles may be heard at times along the margins of the lungs at the base of the axillæ or behind. They are heard with the first two or three deep inspirations, are usually transitory, but may be persistent. According to Cabot the presence of these râles in persons over 40 years old is quite physiological. Localized collections of râles in the lower portions of the lungs, laterally or posteriorly, are often due to bronchitis, which may be of streptococcus or staphylococcus origin. These may simulate incipient or acute tuberculosis, but in this situation are not to be regarded as indicative of tuberculosis until proven to be so. Apical râles, especially when localized, are to be regarded with suspicion until proved not to be of tubercular origin.

Pleural friction sounds are usually heard from the fifth to the seventh interspaces about the anterior or midaxillary lines, where the lung makes its greatest excursion. They may be heard all over the chest. When they simulate bronchial râles in character, we may distinguish by their size as compared with the time of their recurrence, moist pleural friction occurring later in the inspiratory act than a bronchial râle of the same size. A dry pleural rub may, at times, be heard on both sides of the chest, inferiorly, in persons in good health. When a friction sound disappears or is heard with difficulty it may be brought out by directing the subject to hold his breath and raise his forearm over his head. During this movement the friction may be heard, care being taken to exclude muscular or skin sounds. Again the subject may be placed on the affected side for a couple of minutes, raised quickly while holding his breath, and while the examiner listens takes a deep breath.

The characteristics of the spoken voice are chiefly of interest in connection with pleural effusions and consolidated lung tissue. The whispered voice is of special value in detecting small areas of consolidation or the boundaries of large areas. Local consolidation may be better appreciated in this way than by the change in the respiratory murmur.

These are some of the features of an examination of the chest which are of interest to the examiner of life insurance applicants.

DISCUSSION.

Dr. Robert H. Babcock:—It is a great pity to have this excellent paper go by without some remarks. Although I can not add anything of interest to the subject, yet I would like to dwell for a moment on spinal deviations as affecting the percussion note. Not infrequently, an individual comes before a physician or medical examiner for an examination of the chest, and the physician detects some difference in the intensity of resonance on the two sides, which may be in front or behind. He is at a loss to determine whether that actually means disease or not. In all such cases I would advise a careful study of the conformation of the chest to determine whether there is scoliosis, for if there is spinal deformity, with some diminution in the diameters of the sides, the percussion note is very apt to be raised, and the breath sounds may be changed somewhat in quality, perhaps a little diminished or in some instances harsh. Before the physician decides that it is due to tuberculosis, if there is slight impairment in the upper portion of the interscapular region of one side, he should carefully weigh the possibility of its being due to deformity. Another thing which has seemed to me of value is this: I have sometimes found the apices, in an individual whose breathing was superficial, to be somewhat deficient in resonance, but after he has taken a number of deep inspirations the percussion note over the upper portion of the chest comes out more clearly as regards its intensity. I think that it is a valuable point..

Dr. James Harvey Lyon: Permit me to suggest that the majority of applicants for life insurance present at first examination conditions which apparently deviate from the normal. This is common observation, and unless we do as Dr. Babcock has just suggested, instruct the patient to breathe for a few moments properly, as we term it, or change his position, we do not get at the condition that really exists.

The author of the able paper to which we have listened says that this condition or that condition "may" be due to a certain cause. The fact resolves itself, therefore, into this as a deduction from the paper, namely, we are looking for an absolutely normal, ideal individual, whom we can recommend as worthy of life insurance. So far as they deviate from the may-be's or may-not-be's, we will register them as normal risks and necessarily so decide, a condition of no certitude. I would emphasize the first remark I made, that the majority of cases which we examine for life insurance present something which apparently deviates from ideal normality, but that with a little instruction to the applicant in the matter of breathing, position, etc., the apparent abnormality will disappear or explain itself, and we obtain upon physical examination that which we readily recognize as indicative of normal conditions, and, therefore, look with judgment and a better hope upon the applicant.

Dr. Patton (closing the discussion):—Dr. Babcock's remarks with reference to scoliosis were very pertinent. It is not even necessary to have a deformity of the spine, for we know that the habitual position people get into will cause a sufficient deviation of the spine to modify the breathing on one side of the chest without there being absolute pathologic changes in the spine. Take patients as they run and outline the vertebral processes, and then ask them to stand perfectly erect and you will be surprised how many people who would scoff at the idea that there is anything the matter with their backs, will show deviations of the spine sufficiently marked to modify the action of the two sides of the chest. We are entirely too much in the habit of ascribing slight deviations in the functional capacity of one lung to something inherently wrong in that lung. We are not sufficiently in the habit of going outside the lung tissue itself to look for such causes in the muscles and bones of the chest, in obstruction in the upper respiratory passage, in conditions below the diaphragm which interfere with the proper action of that muscle and of the lung. All these things influence the type of respiration, together with the various habits of breathing which the average person gets into, and, if we would look further than the mere tissue of the lung, we will find often causes which may be removed and so dispose of signs in the lung itself, which appear to be pathologic, but which are not.

In regard to the remarks of Dr. Lyon, I am perfectly free to admit the ifs and ands. I want the ifs and ands of the situation; but it very largely depends on a man's experience as to the relation which a certain sound bears to certain intrathoracic states. You can not tell absolutely that certain features of a given sound always mean exactly the same thing. Sounds that are heard by one physician may be interpreted by him to indicate the existence of a certain pathologic condition. The same sounds may be interpreted differently by another physician who listens to them. What I tried to bring out in my paper was this, that some of the sounds as heard that are regarded as pathologic represent nothing so far as the patient's insurability is concerned.

Dr. T. B. Wiggin read a paper on "Neurasthenia: Its Prognosis and its Relation to Medical Selection."

DISCUSSION.

Dr. Sidney Kuh:—There are a few points in which I differ from the views expressed by the essayist, and these differences are largely due to the fact that our definition of what constitutes neurasthenia is not the same. Dr. Wiggin's view of the subject, I think, is broader than mine, in that he includes a number of symptoms which to me would indicate some other disease than neurasthenia. He spoke of disturbances in the sexual apparatus as a frequent cause of neurasthenia. I believe that these disturbances are commonly over-estimated as causative factors in the disease. I do not mean to say that they are of no importance, but rather that we are inclined to attribute to them greater importance than they deserve. This is especially true of masturbation. I have serious doubts whether masturbation ever produces neurasthenic symptoms, and I believe that in all cases of excessive masturbation, we have to deal not with cause and effect, but rather with two effects of the same underlying cause. I do not believe that exces-

sive masturbation ever occurs, excepting in an individual who has a vicious nervous heredity, who has a nervous system which is predisposed to disease, and that causes both excessive masturbation and neurasthenic symptoms. Of course, excessive masturbation in turn will increase the degree of neurasthenia existing in that individual. I disagree with Dr. Wiggin when he states that neurasthenia necessarily decreases the capacity for brain work. The severe stages of neurasthenia undoubtedly have that effect, but the majority, perhaps all, of those who do great brain work in these days, and who have done great brain work, have been more or less neurasthenic. Another point in which we differ is as to the effect of neurasthenia on sexual power. There, too, I believe it is only the severer degree of the disease which produces a diminution in this function. In the milder forms of neurasthenia, we frequently meet rather the opposite condition, excessive sexual appetite, which again reacts upon the nervous condition of the patient in a disastrous way.

One other point I want to mention is this: In speaking of the various diseases which it is necessary to differentiate from neurasthenia, Dr. Wiggin spoke of hypochondriasis. I do not believe that there is much difference of opinion amongst neurologists to-day as to the importance of the group of symptoms which are known as hypochondriasis. They are not considered by the majority of neurologists as a clinical entity. They are not considered as a disease, but rather as a group of symptoms which are especially common in neurasthenic individuals.

As to the prognosis, that seems the point that interests us most. I do not believe that neurasthenia in itself shortens life. In fact, the neurasthenic individual, as a rule, is rather a "wiry" individual, though he is inclined to make a good deal of to-do about slight disabilities. He is, so far as my experience goes, rather healthier, if we consider only the graver ailments, than the average person, and I believe that if we could gather statistics as to the duration of life in those who are neurasthenic, and in those who are not, we would find that the duration of life in neurasthenics would prove to be as long as it is in the average of the population. This appears to be true in spite of the fact that there are certain features about neurasthenia which one might believe would have a tendency to shorten life. Most neurasthenics suffer more or less from gastrointestinal disturbances and anemia, and one would imagine that these diseased states would have a tendency to decrease their resistance; still, I think the resistance of the neurasthenic to infectious diseases is doubtless as great as that of the average individual. One of the ways in which neurasthenia may have a tendency to shorten life indirectly is by causing a craving for stimulants, a fact to which Dr. Wiggin has already called our attention. It is the neurasthenic individual who is liable to abuse alcohol, tobacco, and other stimulants, and one can readily see how in that way he may injure his heart and kidneys, and so shorten his life.

Again, the neurasthenic is more liable to suffer from diabetes than the non-neurasthenic individual. This may be partly due to the fact that excitement has a tendency to produce diabetes, and that the neurasthenic is an individual who is in a state of chronic excitement, who is easily disturbed by slight influences which would hardly disturb a healthy individual. It does not seem at all improbable that if, for any reason, should he develop Bright's disease, he would be more likely to have uremic conditions than the non-neurasthenic, since it is a well-known fact that violent excitement in nephritics is very liable to produce symptoms of uremia. It is often stated that neurasthenia may "develop into" dementia paralytica. That statement I believe to be absolutely incorrect. A neuropathic disposition has some influence in the causation of dementia paralytica. A person who has a bad nervous heredity, who has early in life acquired syphilis, would probably be more liable to develop paresis later in life than the person who has no vicious nervous heredity. But I do not believe that neurasthenia ever constitutes the first stage of paresis, as some seem to think. I do not believe that neurasthenia is an important causative factor in what we ordinarily term the insanities. Of course,

the same underlying cause that leads to neurasthenia, that is, a neuropathic disposition, may, under favorable conditions, be the cause of insanity.

In speaking of the prognosis of neurasthenia, I believe it is necessary to draw a sharp line between the neurasthenia which is due to other etiological factors and some forms of traumatic neurasthenia. It has been demonstrated that cases of traumatic origin, especially those that are due to injury to the head, in which the early symptoms are those of a neurasthenia, with nothing beyond that and absolutely no indication of organic disease for months, sometimes develop, later on, signs of graver brain trouble. We now have the records of a number of post-mortems, with careful examinations of the brain, showing changes which, in all probability, must be attributed to the injury. I would say, then, that the ordinary form of neurasthenia, in my opinion, has not a distinct tendency to shorten the life of the sufferer; but that in cases of injury to the head which produce neurasthenia, the prognosis as to life, would be considerably less favorable.

Dr. Julius Grinker:—I regret very much that Dr. Wiggin has attempted to discuss hypochondriasis, hysteria, and neurasthenia under one heading; and yet he mentioned toward the end of his paper that these conditions are to be differentiated from each other. If I dissent from any one point in the paper, it will be with reference to his conception of neurasthenia. His idea of neurasthenia is an antiquated one that has been given up long ago. Neurologists of to-day maintain that there is a condition of neurasthenia different from that mentioned by the essayist, to which the previous speaker has already called attention. But while discussing the subject and taking issue with the essayist regarding certain points, he still left us in doubt as to what he meant by neurasthenia. I will state what I mean by neurasthenia, and then speak of its prognosis.

I would exclude the conditions Dr. Wiggin mentioned, which begin in early life and in which psychic degeneracy is a marked feature; conditions which show the so-called stigmata of degeneracy or an insane heredity, and also the cases manifesting hypochondriacal symptoms. Neurasthenics usually have no neuropathic heredity; they are most commonly the offspring of tuberculous, gouty, or arthritic parents. The neurasthenic was probably delicate in childhood and has probably passed through a number of infectious diseases, which caused a weakening of the nervous system. The patient who has psychic degeneracy or insanity in his ancestry is not very apt to become a neurasthenic, but will most likely develop either hysteria or become the subject of some form of psychosis or hypochondriasis, or he may even develop the dementia of youth, the so-called dementia precox. In true neurasthenia, the symptoms of nervous exhaustion usually develop in adult life. It is true, as Dr. Wiggin has stated, that we all begin life with a certain limited amount of nerve capital, and it is possible that a man may escape neurasthenia if he does not dissipate his nerve capital and lives with reason, even if he has a tendency to nerve-exhaustion. He may be able to go through life unscathed. Those become neurasthenic who overestimate their abilities for hard work and do not know when they are beaten. In many instances it is overwork combined with worry, and in many others infectious diseases so weaken the organism as to produce nervous exhaustion. True neurasthenia means a condition of nervous fatigue, which is chronic in duration. Imagine the ordinary tired feeling experienced after some exertion, physical or mental, becoming a permanent condition and you have a fair idea of the neurasthenic state. The nervous and physical fatigue hinder the patient from meeting the ordinary obligations of life as he was accustomed to meet them. He can not work hard physically, nor can he work mentally as he wishes to do, and everything he undertakes bears on him heavily, because he is suffering from nervous exhaustion.

I want to say a word or two with reference to the prognosis of neurasthenia. So-called congenital neurasthenia does not exist, in my opinion. It is a neurasthenoid state, that is, like it, but not neurasthenia. Neurasthenia, as understood to-day, is a fatigue neurosis and can be recovered from. It is coming to be regarded as a self-limited disease, which may last from several months to two or

three years, and patients get entirely well. When an applicant for life insurance who is suffering from neurasthenia presents himself to the medical examiner he will rarely inform him that he is nervous, but the examiner should have some clue as to the existence of the disease. The candidate usually flushes; he perspires; his pulse becomes accelerated; he pants for breath; is very anxious about the findings and a common question is: "Doctor, do you find my heart and lungs all right?" He has a great many more questions to ask you, if you will permit him. There is something suggestive about the appearance of a nervous individual which is difficult to describe. Supposing we have discovered that an applicant for life insurance is a neurasthenic; what shall we do? Accept him, of course. The average neurasthenic is apt to be a long-lived individual. He is going to take care of himself because he has received timely warning in the shape of symptoms of fatigue. He knows that he is nervous and he is going to be careful about his mode of life. When he does this, he is apt to live a long time.

Some textbooks state that a patient who is the subject of neurasthenia, ultimately will develop arteriosclerosis. It appears to me that in cases in which this has been observed there were already cardiovascular changes before the neurasthenic symptoms had developed. Neurasthenia may appear as a complication in many cases of organic disease. A man with diabetes may be a neurasthenic. Neurasthenia and diabetes are often found in the same individual, but patients do not develop diabetes simply because they are neurasthenics. General paresis in its early stages presents symptoms which so closely simulate those of neurasthenia that often a patient passes for a neurasthenic a long time before some one discovers that he is really paretic. Whenever we notice a decided irregularity or inequality of the pupil in a supposed case of neurasthenia we become suspicious of our diagnosis. Speaking of neurasthenia in the limited sense of the term, I would say that its subjects are good risks for life insurance, although they occasionally impress the examiner as being very sick.

TUBERCULOSIS IN OUR DISTRICT.

DR. JOHN A. ROBISON,
CHICAGO.

When your committee on program did me the honor to ask me to participate in the program to-night I chose the subject "Tuberculosis in Our District" for two reasons: first, to secure the co-operation of the members of our district in carrying on certain work the Chicago Institute of Tuberculosis is about to inaugurate; and, second, to display before you as graphically as possible the prevalence of tuberculosis in our midst and arouse a discussion as to the best means of combating it.

First, it might be wise to give a brief history of the origin and aims of the Chicago Institute of Tuberculosis. As you probably know, the Visiting Nurses' Association has done a great deal of good during the past few years by nursing and educating tubercular patients how to prevent and alleviate consumption. For two or three years past there has been a committee on tuberculosis, composed principally of physicians and philanthropic laymen, who have co-operated with the Visiting Nurses' Association, and have maintained an office in the Visiting Nurses' Association rooms, and have done a great deal of work among the tubercular in our city, the city being districted and each district having a visiting physician, who visits such cases as have been reported to the Visiting Nurses' Association as probably having consumption. After the case has been examined by the physician a nurse is detailed, who visits the patient, instructs the family what precautions to take, and from time to time the patient is visited and progress recorded. The nurse in her report to the office details such facts concerning the home, its sanitary or insanitary condition, whether other members of the family present suspicious evidence of being consumptive, etc. The pin-map which I ex-

* Read before the West Side Branch, March 15, 1906.

hibit tonight is the result of much of the statistical work in connection with data obtained through the health office which has been done by the association. The amount of work which has devolved on the Visiting Nurses' Association has become too voluminous for the association to undertake, and therefore there has been organized the Chicago Tuberculosis Institute for the purpose of carrying on the fight against tuberculosis. The objects of this organization, as stated in its constitution, are: 1. The collection and dissemination of exact knowledge in regard to the causes, prevention and cure of the disease. 2. The promotion of legislative and other measures for the improvement of living conditions. 3. The treatment of the consumptive poor in one or more dispensaries or in such other institutions as may be established for that express purpose, or by such other means as may be considered feasible and desirable. The attainment of its concrete objects is assigned to the following departments:

Department of Education.—To continue in general the work carried on by the committee: administration, investigation, lectures, printed matter, bibliography, correspondence.

Department of Dispensaries.—This department is to establish at once and manage a central dispensary, which is to provide medical treatment for ambulant cases (all forms of tuberculosis), exert beneficial activity in the families of consumptives, and by all possible means work for the improvement of sanitary conditions in the home.

Department of Sanatoria, Camps and Hospitals.—This department will endeavor to provide institutional care for poor consumptives.

Department of Immunity Research.—Will conduct experiments, seeking to make possible the artificial immunization of man, on similar lines to the successful methods now employed in cattle.

While I do not belong to the department of education, I thought this would be a good opportunity to interest you in the special department to which I have been assigned, viz., Sanatoria, Camps and Hospitals, but I wish to casually glance at the objects of the other departments before dealing directly with my own department. And as to the department of education, it is fully equipped with literature, and under the administration of the chairman, Dr. Klebs, is ready to enter on an active campaign. Any physician interested in this work is asked to co-operate and spread the information among his clientele and assist in the work of educating the public.

The department of dispensaries is under the chairmanship of Dr. E. A. Gray, and this department has its plans well matured for establishing a dispensary soon. I understand the vicinity of the County Hospital is thought to be the most appropriate place. This society should take an active concern in the dispensary if it is established. The dispensary is intended only for the poor and will not interfere with the private patients of physicians; in fact, it will be a safeguard against unduly pauperizing the public. It is hoped that all physicians who come in contact with tubercular patients will inform the Tuberculosis Institute of such cases, for statistical purposes, if the patients are well to do, and for treatment, if the patients are poor and the physician does not feel that he can spare the time to care for them.

As to the department of Sanatoria, Camps and Hospitals, I show you to-night the distribution of tuberculosis in some of the wards, and wish to emphasize the necessity of establishing such institutions.

The statistics were collected by the Visiting Nurses' Association during 1904 and 1905, and kindly collated by Mr. Davis, Clerk of the Tuberculosis Institute.

TUBERCULOSIS ON THE WEST SIDE.

Cases reported to tuberculosis committee during two years, from Wards Nine to Twenty inclusive, embracing the thickly populated district of the West Side:

Ward.	No. 1904.	Rate per 10,000 living, 1904.	No. 1905.
9	109	19.73	100
10	118	20.65	112
11	112	18.51	123
12	104	14.95	120
13	73	14.35	81
14	124	22.19	123
15	80	14.25	88
16	90	13.66	134
17	168	24.48	171
18	198	58.99	175
19	164	30.65	160
20	103	18.44	90
Totals	1,443		1,477

The rate per 10,000 living of cases reported in 1904, for the entire city, was about 20.04. Seven of these wards are below that rate, and five above it. The high rate in Ward 18 is caused largely by the lodging houses in the neighborhood of West Madison street. There are seventy-one lodging houses in that ward, and the class of people who patronize them, together with the condition of the houses themselves, makes tuberculosis extremely prevalent in them.

The ghetto is on the West Side, in the Nineteenth ward; the largest Bohemian settlement in America is in the district from Halsted to Ashland avenue, and from Sixteenth to Twentieth. There is also a large Italian colony, and many other foreign colonies in the Hull House district in Ward 19.

In the central part of the West Side there are more very old, wooden houses—many of them moved to the rear of lots—than in almost any other part of town. This part of town has not been renewed since the great fire to the extent that other parts have. Probably a full investigation would show a greater extent of bad housing in the district under consideration than anywhere else in the city, at least in residence districts.

ELECTROTHERAPEUTICS.*

DR. GORDON G. BURDICK.
CHICAGO.

This name has almost become obsolete, and has been replaced by physiological therapy, which involves the use not only of the different forms of electric modalities, but the use of vibrations, massage, hydrotherapy, and a refined system of calisthenics. The question of electrotherapy is constantly bobbing up in some form or another, just at the time when the "conservative element" in the profession had thought they had it decently interred where it would no longer trouble or disturb their thoughts. From the earlier inception of this line of treatment, warfare has been on between its devotees and others, who for some reason have failed to attain much success with it in the treatment of disease. The conservative men of the profession have always succeeded in putting the electrotherapeutists on the defensive, and a "parrot and monkey time" has always ensued when the matter has been brought up for discussion, with the inevitable result that the truth has rarely appeared in print.

The work of physiological therapy has undergone a radical change in the last ten years. About 60 per cent. of our work has been surgical disasters, or the wrecks that are turned out of our operating rooms, broken in spirit, body and purse. The demand for some relief for this numerous class of sufferers has enlarged the field of endeavor until, at the present time, it embraces every known form of modifying physiological processes. That we are wonderfully successful can be judged by the enormous number of physicians who are entering this field.

* Read before the Stock Yards Branch of the Chicago Medical Society, March, 8, 1906.

As soon as a physician sees one of his so-called incurable nervous wrecks restored to health he immediately becomes a convert and purchases several hundred dollars worth of machinery and starts in this special line,, and seems to think that, in some way, the machinery has special medicinal value. He does not realize, until he has spent his money, that to be successful requires harder study and more special knowledge than he ever dreamed of in medicine; in fact, he discovers that the machinery is of small consequence if he does not recognize the condition presenting itself to him for treatment, and selects the suitable form of energy for the case in hand.

A physician to be successful in physiological therapy must be a first-class diagnostician, and must cultivate an inward contempt for any other man's idea until he has verified it by his own labors. The necessity for this has been proven to me, over and over again, in the last few years, where I have had tuberculosis sent to me that turned out to be tertiary syphilis, as well as other cases with a diagnosis of syphilis that proved to be tuberculosis. Many times these cases will present themselves with both diagnoses having been made, and, frequently, with a tubercular infection grafted upon a syphilitic sore. As a general rule, very little is accomplished in these cases by the use of drugs, as nearly all of them have undergone the drug treatment until their stomachs rebel at the very thought of medicine. Their usual appearance is a general lack of nervous tone, with considerable physical disability, and a very much enfeebled stomach.

The keynote of success in physiological therapeutics is, first, to attend to the digestive organs, to be sure that the food taken into the stomach is suitable, sufficient, and well digested. Invariably, these patients present themselves with more or less ptosis of the abdominal organs, a dilated stomach, and a flabby abdominal wall. To most physicians it would seem an absurd procedure to treat a local tubercular ulcer, located upon the extremities, by a sinusoidal massage of the muscles of the abdomen, and upper extremities, one electrode placed at the nape of the neck and another moved about the abdomen. As the different groups of muscles respond we cause every one to move at least twenty-five times during the course of the treatment. This treatment is repeated daily with gradually increasing vigor of muscular movement, until the patient can be taught to control the muscles of the abdomen as well as other parts of the body. A weight is placed upon the abdomen and the patient is compelled to move it from place to place by the action of the muscles alone. When we have arrived at this stage we find that the patient has excellent control of himself. Next, a rubber ball is placed upon the abdomen, and he is taught to play with it, throwing it up and catching it; some become so expert that they will support themselves upon their head and heels, and throw and catch the ball for five minutes without exhaustion. After they have reached this stage they are taught to grasp their stomach between the diaphragm and abdominal muscles, and after drinking a pint of water to shake the contents as well as they could with their hands, and eventually squeeze the contents of the stomach into the duodenum. By this time, if the proper calisthenics have been given to the remainder of the muscular system, our patient can sleep and eat, and begins to take an active interest in his surroundings. The improvement being so great in his general health, distinct signs of improvement have taken place in the ulcer, which we are now ready to treat. If it has been proven a true tubercular infection, the *x*-ray alone is used, if mixed with the streptococci, liberal doses of streptolytic serum is injected twice a week. If external ulcerations are present they are given local feeding to hurry up the process as much as possible, some of the various beef extracts, rendered antiseptic, being used. If we have considerable tissue that we wish to get rid of we use a zinc electrode amalgamated with mercury, connected to the positive pole of a galvanic battery, and drive the chlorid of zinc and mercury into the tissue; this is followed by an external slough, its size depending upon the time and the amount of current used. The slough will separate in about ten days, leaving beautiful granulations behind it, with a zone that has been rendered sterile, extending for

one inch around the field of operation. Granulations will fill in the place in a few weeks, leaving a fine flexible cicatrix.

There are several fundamental principles that all physiological therapeutists must learn. They are broad and easily understood: First, a positive current is a sedative; second, a negative current is a stimulant; third, a current always disintegrates a fluid conductor through which it passes, and in an exact ratio to its ampere value; fourth, motion takes place in both directions within a conductor; fifth, hydrogen is liberated and gathers at the negative pole; sixth, oxygen gathers at the positive pole; seventh, a broken circuit or a change in potential will produce muscular contraction; eighth, that all metallic elements are disintegrated, their ions driven from the positive pole to the negative; ninth, the human body may become a condenser, and can be charged and discharged at will.

If we conceive of electricity as a motion we can get a better mental grasp of our subject. Let us adopt the theory that a positive flow of current means a right-handed revolution of the corpuscles within the atom, while a negative manifestation means a left-handed rotation of the same. This will enable us to understand further the difference between currents and volts, or electro-motive force. The number of turns made by the corpuscles in a second's time is the electromotive force, while the number of corpuscles that turn in a second's time is the ampere flow. We can increase our voltage by increasing the speed of our corpuscles, or increase our amperes by moving a greater number of them. All the different modalities are of the same origin, and are merely a different adaptation of Ohm's law. The medicinal effect of the different kinds of current, depends upon the mechanical, chemical and physiological effect upon the body cells. With the lower potential currents, the chemical effects are noted, while with the high potential currents the mechanical effect predominates. With the condenser, or oscillatory discharge, including the high frequency currents, the effect is physiological. By carefully keeping this in mind the indications in treatment are easy. Suppose, for instance, that we desire to treat a woman with an old chronic pyosalpinx, adhesions and exudations giving the impression of a solid pelvic floor. We would use the galvanic current with a large, well protected, copper electrode, connected to the positive pole, and a large clay negative electrode under the back or over the abdomen. We would use about 100 m. a. of current three times a week, driving the copper ions into and through the dense mass within the pelvis. This is done in order to get the local and antiseptic effect of the colloidal copper within the tissues. Next, we would use a vaginal negative electrode, in order to make the tissues throughout the mass strongly alkaline owing to the decomposition of the fluids liberating hydrogen. We know that all exudates are much more soluble in an alkaline medium, in either an acid or a neutral form. After a few of these treatments we will find that the uterus is quite movable and painless upon manipulation, and the time has arrived when we desire to get mechanical and physiological effects from our treatment; so we connect the vaginal electrode with one pole of the condenser, and, after carefully insulating the patient, the condensers are allowed to discharge slowly through a spark gap of about one inch. Each time a spark passes, the patient receives a discharge, and a vigorous muscular contraction takes place all over the body, and particularly in the muscles surrounding the electrode. This treatment is given ten minutes daily, and in a few weeks all indurations and adhesions will have disappeared, and the uterus will be as movable as in one who has not had this trouble. When a patient becomes one side of a condenser, we must understand that every cell in the body is under a torsion strain, and when this strain is suddenly relieved a series of oscillations are set up, while the cells endeavor to attain an electrical equilibrium, while the repeated charging and discharging gives us an atomic massage reaching nearly every cell in the body.

It can be seen from the foregoing that the subject of electrotherapeutics has branched out, until to-day there exists no text-book that even scratches the surface of the subject, and for that reason the beginner has a hard row to hoe. "Does the work pay?" is a question I am asked many times a week by some physicians who are thinking seriously of devoting their time to this specialty.

This is a hard question to answer, owing to the requirements that must be possessed by the operator. It is hardly to be expected that a man not conversant with the subject of physics, electricity and mechanics, as well as a thorough knowledge of medicine, would make much of a success. For those who master the subject thoroughly, and give it time and attention, it is sure to give good returns upon the investment. A physician who is in general practice, however, who works from sixteen to twenty hours a day, it would seem an act of folly to make so large an investment in machinery that he will not be able to use enough to keep the bearings oiled and the dust off.

Few physicians have enough cases in their own practice to justify much of an outlay for equipment, and as he must compete with specialists who demand and get larger fees, he cannot possibly reject apparatus that has become obsolete, or buy new things that appear from time to time, owing to the lack of income. It is doubtful if the average practitioner, who is without mechanical training, could get satisfactory results from the use of this modern and delicate machinery, owing to a lack of time to become thoroughly familiar with it. There is another lamentable fact connected with the use of physiological therapy, and that is that it is being grasped and used by barbers and trained nurses, osteopaths, and many other classes of helpers, who hang on the ragged edge of medicine and catch the crumbs from its table. They are encouraged by many well meaning physicians who sympathize with their up-hill struggle in making a living. Their confidence is being abused, however, as they are exploited as the patrons of the particular advertiser, and their names used to attract other patients. Manufacturers are maintaining clinics, where soft-pated physicians can take their pay patients and initiate them into getting medical service for nothing. It rather seems that a patient who pays his doctor's bill needs a guardian these days, and it certainly shocks many of them when they are asked to pay.

This special field is filling rapidly, a large number of graduates going directly into this line of work, and, in a few years, when we begin to get the usual crop of case reports from the "scientific" members of the profession, recording failures by the hundreds, physiological therapy will be relegated to the background again for another period of "innocuous desuetude," only to be resuscitated by the labors of a few physicians who are especially fitted by nature for this exacting line of work. As soon as electrotherapeutics become popular, manufacturers exploit their apparatus and encourage the physician in the belief that in some way the instruments have a therapeutic effect, and the physician gets the idea in his head that if he has a case on hand that puzzles him and will not yield to any treatment that he has been able to think of, he immediately thinks it a good plan to use some of the different forms of electric modalities, in the hope that if it does not do any good, it, at least, will not do any harm. The Indian medicine man doubtless has the same belief when he shakes his "rattles" over the patient's bed.

Success with physiological therapeutics means an accurate diagnosis and a correct theory of the pathological condition present; a complete knowledge of the different forms of electrical modalities, and the methods of developing their chemical, mechanical or physiological effects. It would seem very easy to acquire this knowledge, but, in practice, nothing is harder or requires more painstaking research, as few of the really successful electrotherapeutists have written books upon the subject, and their ideas are scattered in papers read at conventions and published in various scientific journals not ordinarily within the reach of physicians.

The class of cases handled by physiological therapeutics are: First, skin diseases, in which the *x*-ray has been found almost a specific; second, malignant diseases, by both the *x*-ray and the zinc-mercury cataphoretic process; third, nerve degeneration causing atrophy of muscles and nerves; fourth, pelvic diseases of women, who have been either unsuccessfully operated upon, or who refuse operation; fifth, ptosis of abdomen, dilated stomach, and prolapse of the pelvic floor;

sixth, urethral strictures and their various complications; seventh, neuralgias, neuritis, and pain of doubtful origin, classed usually under the head of neurasthenics.

The *x*-ray has been found very reliable in eczema, acne, psoriasis, mycosis, fungoids, hyperdrosis, lupus vulgaris and epithelioma. With this classification success can be predicted and failures are rare.

The *x*-ray is slowly but surely winning its way in the treatment of both sarcoma and carcinoma, and, as the technic is being improved and cases being treated earlier, the percentage of successes is gradually climbing the scale. The indications are strong that we shall eventually find it the most successful method of reaching this numerous class of sufferers.

In the nerve degeneration we have a potent remedy in the high frequency current, supplemented with suitable hygiene, calisthenics, and drug medication. If the function cannot be restored in certain cases, at least the progress of the disease may be arrested, the power and strength of the muscles may be restored, and wonderful progress made in building up their bodily health.

In pelvic disease some of the greatest successes have been made in physiological therapeutics. By suitable combinations of modalities we are enabled to throw within and through the inflamed tissue collodial copper, which is one of the most powerful antiseptics and astringents known. We can sterilize great masses of tissue and do it without pain or danger, if a certain amount of brains is used with the treatment. We can render the mass acid or alkaline at will, and can stimulate every muscular fiber within and without the mass, by means of our oscillatory currents, promoting absorption. For instance, let us take a bad case of leucorrhea, with a chronic endocervitis. We drive large quantities of collodial copper into the tissue a few times and bring about a perfect cure. The muscles of the vagina can be developed by means of the bipolar electrode and interrupted currents, until the patient has excellent control of them, doing away with the symptoms of prolapse. We can take fistula of the anus, and where it is possible to follow the entire sinus with a copper wire, we can drive the collodial copper into the surrounding tissue and completely sterilize the tract and surrounding tissue, allowing cicatrization to take place. We can cut a stricture of the urethra with a negative electrode one inch in length in five minutes, without pain, hemorrhage, or discomfort. We can destroy a Bartholinian gland by means of a zinc electrode amalgamated with mercury under local anesthesia, or, if desired, sterilize it by means of the collodial copper. We can destroy granulations and stop hemorrhage from the uterus, where it depends upon polypii or granulation, and do it without pain or distress. The effect is not temporary, but is as effective and permanent as any other method of treatment. In ptosis of the abdominal contents and muscles, as stated elsewhere in the paper, this condition can be completely relieved. For pain, we find some of the numerous modalities are certain to give relief, except in those rare cases where it is of central origin, and, even in this class of cases, many things are possible if we have a sufficient number of cases at hand for further experimental work, as a suitable high frequency may be used that would produce a profound sleep.

It can be seen from this brief résumé of cases that physiological therapy has a field nearly all its own, as we are succeeding in a class of cases that have been the torment of the average physician's life, and, from the foregoing, it must be clear to all newcomers in this field that they can only be successful where this is their business, and where they will use all of their time studying and experimenting, in order that their work may be exact.

I have not begun to cover the field that physiological therapy is successful in, and it would be impossible to do so in the time assigned to me in this meeting, and for that reason I am perfectly willing to answer any and all questions that you choose to ask during the discussion.

CHICAGO SURGICAL SOCIETY.

A regular meeting was held Dec. 1, 1905, with the President, Dr. D. A. K. Steele in the chair. Dr. Louis A. Greensfelder reported a case of coxa vara and exhibited the patient. After giving the history of the case, present illness, examination, and measurements, the reporter spoke briefly of the etiology and treatment. He said that the cause of coxa vara may be due to late rachitis, juvenile osteomalacia or arthritis deformans. Frequently it is bilateral, and then it is associated with marked lordosis, simulating congenital dislocation of the hip. As to treatment, the patient was put to bed with Buck's extension, which was continued for four weeks, with the internal administration of small doses of phosphorus. In the last two weeks massage and electricity have been employed. Limp and walk have materially improved.

Dr. Wallace Blanchard followed with the report of a case of coxa vara adolescentium, which presented many interesting features.

DISCUSSION.

Dr. Edward H. Ochsner said the two cases represented distinct types of coxa vara. The one demonstrated by Dr. Greensfelder impressed him as being a case of coxa vara due to traumatism. In Dr. Greensfelder's case the neck had not suffered much in length; it was almost normal except that it tilted and was horizontal instead of being at an angle of 129 degrees. There appeared to be less trouble also in the acetabulum. He thought the case shown by Dr. Blanchard was evidently one of static coxa vara.

Dr. L. L. McArthur said it looked as though the diagnosis between a fracture and coxa vera in Dr. Greensfelder's case was reasonable. Dr. Edwin W. Ryerson considered Dr. Greensfelder's case either one of fracture or separation of the head of the femur, and not a true case of coxa vara.

Dr. John L. Porter said that in a large number of cases, if studied carefully, there would be found a history of injury, but oftentimes only a slight injury. He had been surprised at the cases in which separation of the epiphysis of the femoral head had taken place with very slight traumatism. He had seen a number of cases of this kind of deformity at the Cook County Hospital, and in almost all of them the ages were between 12 and 20, most of them being young men. The history was that of slowly progressing disability, with marked adduction and a good deal of pain in the groin, or of slight traumatism followed by pain in the groin. While the patients thought they were well there was always some limping and marked adduction.

Dr. Daniel N. Eisendrath had seen the boy with Dr. Greensfelder and concurred with him in the diagnosis of true coxa vera. He thought if the members studied the *x*-ray print carefully they would see that such a position was well taken. The condition was to be seen better on the print than on the plate itself. He said it was a rather unusual point for an epiphyseal fracture to occur.

Dr. M. L. Harris could not agree with Dr. Eisendrath in regard to the interpretation given the skiagraph, as there was a distinct, sharply defined, marked angularity of the neck of the femur, a thing which one rarely or never saw in a case of true coxa vara. Dr. Wallace Blanchard disagreed with Dr. Eisendrath that separation occurred through the epiphysis. His experience in fractures close to the epiphysis was that they never occurred where they should. Of some 800 cases of osteoclasis, in two-thirds of which the epiphysis was under pressure, in only one was there separation of the epiphysis. If there was any opportunity at all the fracture would occur outside and away from the epiphysis rather than in the line of the epiphysis.

Dr. Daniel N. Eisendrath presented a patient upon whom he had operated for right-sided subphrenic abscess following appendicitis. He also exhibited a case of extensive macroglossia in a boy of four, whose tongue at the time of birth was so large that it protruded from the mouth. The case was treated by cauterizing all of the superficial vesicles with the Paquelin cautery, instead of performing a radical operation of extirpation of the entire lymphangiomatous area. Since this

operation the tongue had become much smaller. Dr. Eisendrath also showed a case of advanced Raynaud's disease, in which amputation of one toe on the right foot and three toes on the left foot had become necessary on account of gangrene. He then presented a patient from whom he had removed a right-sided branchial cyst about two months previously, also a patient with an impacted fracture of the neck of the humerus. Dr. Eisendrath's cases were discussed by Drs. L. L. McArthur, A. J. Ochsner and the discussion closed by Dr. Eisendrath.

Dr. Alexander Hugh Ferguson read a paper entitled Ischemic Atrophy, Contractures and Paralysis.

The author said that ischemic atrophy and paralysis, being the changes which occur in muscles from which the blood supply is more or less cut off, may be due to 1, arterial, depending on two conditions: (a), interruption must be nearly complete; (b), interruption must be of more than two or three hours' duration, otherwise it is easily tolerated. Sometimes there is incomplete interruption for several days. 2. An interrupted venous return, the causes of which are: 1, cardiac embolus; 2, thrombus due to syphilitic endarteritis, or following acute infective diseases; 3, Raynaud's disease, changes in vessels due to defective nerve innervation; 4, direct injury to a vessel; 5, cold; 6, most common of all, tight splinting, to which the author referred at considerable length. The symptoms of ischemic atrophy were discussed in detail.

As to the course, this depends on the duration of the primary ischemic condition. When cramps and rigidity have set in probably no immediate recovery of the muscle is to be looked for, but short of this the muscles may readily recover if the blood supply is restored.

After reviewing the most prominent points relating to ischemia, the author reported two recent cases in which favorable results followed operative treatment.

Dr. Ferguson also showed improved clamps and artery forceps. He said they were small angiotribes, and he had used them a year before he had the instrument makers make them in large numbers. Surgeons were now using them. Dr. A. J. Ochsner, in discussing Dr. Ferguson's paper, said he had seen cases of ischemic atrophy, but had never treated any of them surgically.

A regular meeting was held Jan. 5, 1906, with the president, Dr. D. A. K. Steele, in the chair. Dr. Charles Adams reported the following cases: 1, Popliteal aneurysm; 2, hydronephrosis and appendicitis; 3, hydronephrosis; 4, renal calculus, nephrolithotomy, cystonephrosis; 5, gonorrheal pyelitis, nephrotomy, nephrolithotomy, nephrectomy.

Dr. D. A. K. Steele reported the case of a man, 54 years of age, well-digger by occupation. There was no venereal history. Four years ago patient noticed a round, semi-solid tumor on his back, to the right of the spine, about the third dorsal vertebra. At this time he suffered no inconvenience from the growth. On palpation there was no pain nor signs of inflammation. From the time the growth was first observed it had slightly increased in size until the end of the first year, when it was about the size of a large orange. This was three years ago. For the past two years the tumor had grown more rapidly, without causing any pain or inconvenience until within the last three months, when it was noticed that the growth increased rapidly and began to cause some inconvenience from its size. It was twenty-one inches in diameter and sixty-one inches in circumference; its long diameter was nineteen and one-half inches, transverse diameter ten inches. On account of the size the tumor had attained and the fact that about two weeks previously a small superficial ulceration appeared, and that upon its surface a number of superficial veins became quite prominent and tortuous, the question of diagnosis came up. When the speaker first examined the patient the tumor looked like an ordinary lipoma developing in the back, and the patient consulted him on account of this small superficial ulceration, which he believed to be due to atrophy of the skin from great distention. Careful examination showed a number of large venous trunks running over the surface of the tumor, some of them as large as the finger. The growth presented the characteris-

tic feel of a fatty tumor. It was lobulated. The next day Dr. Steele excised the tumor by lifting up the tumor mass and transfixing its broad pedicle with a very long pedicle-needle, threaded with a rubber ligature, which was tied around the two halves of the base, permitting a bloodless excision of the tumor, which weighed eleven and one-half pounds, and on section proved to be a telangiectatic lipoma. The wound healed by primary union. It was subsequently learned that the patient returned to his home at the end of one week.

Dr. Charles Adams exhibited abdominal retractors, which he had used to great advantage for a considerable time.

Dr. A. E. Halstead reported a case of diverticulum of the esophagus. He also reported two cases of unusual forms of hernia.

DISCUSSION ON THE CASES OF DRS. HALSTEAD AND STEELE.

Dr. A. J. Ochsner said that Dr. Steele's case of tumor of the back was interesting from a diagnostic standpoint. He believed that the differential diagnosis in this case, between myxosarcoma and sarcoma originating either from the fascia or from the periosteum, was to be left open until after the operation. He would be greatly interested in hearing the ultimate diagnosis, although it seemed fairly certain that the tumor must be a lipoma. The cases of Dr. Halstead were also very interesting from the standpoint of diagnosis. The differential diagnosis must be made between the condition which was found and a hernia which had been reduced and had remained strangulated from one of several reasons, either from the presence of a cicatricial band, a volvulus or a piece of adherent omentum, or a condition which he had encountered several times—hernia of a gangrenous appendix, which had been reduced and which left the condition of the patient very much like that which had been described. He had encountered several cases similar to the one described, and in one case he was not wise enough to make a diagnosis of the second strangulation. Dr. Halstead was to be congratulated on his diagnosis and treatment in both cases.

Dr. L. L. McArthur spoke with reference to the use of subnitrate of bismuth in large doses, such as are recommended for the skiagraphic outlining of diverticula of the esophagus. He recalled the fact that at one time, when he was working along chemical lines, he was requested to examine the subnitrate of bismuth sold in the drug stores of Chicago. He examined twenty-one specimens, and of these eleven contained arsenic, some of them in such abundance as to really be dangerous. In other words, in giving an emulsion of four ounces of subnitrate of bismuth, unless one took pains to avoid using the commercial product and employed the C. P. variety, one might have arsenical poisoning of considerable severity.

Dr. Bayard Holmes reported a case of tubercular peritonitis with an enormously distended gall-bladder.

DISCUSSION.

Dr. S. C. Plummer remarked that the question of acute tubercular peritonitis following some injury was very interesting to him in the light of a case which he had a year or two ago. A man received a very hard kick in the right iliac region of the abdomen, and an hour or so before he saw him there supervened a tympanitic condition, which was more marked in the region of the contusion, but involving the whole abdomen. He thought, in all probability, in view of the severity of the injury, and tympanites following so rapidly, there was a rupture of the intestine or some other severe intra-abdominal injury. He made a laparotomy and found no result of the recent injury. What he found was an omental adhesion, which was probably the result of the previous appendicitis for which the patient had been operated upon, the appendix having been removed at the time. The man made an immediate recovery, although there seemed to be more paresis of the bowel than was ordinarily the case after an abdominal operation. About two months afterward he was brought to the hospital again, and came into the service of Dr. W. E. Schroeder. At this time he had symptoms of acute intestinal obstruction. Dr. Schroeder performed a laparotomy and found very extensive tubercular peritonitis, from which the man shortly afterward died. At

the laparotomy, immediately after the injury, he examined all the abdominal contents and did not find any sign whatever of tubercular peritonitis, so that it seemed that the injury or the first laparotomy was the etiologic factor in the causation of this tubercular peritonitis.

Dr. Charles Davison said that Dr. Holmes' case reminded him of one he saw in the County Hospital a number of years ago, and which taught him a good lesson in the diagnosis of gallstone colic. The patient was in the medical service of Dr. Billings and was referred to the surgical side with a diagnosis of cholecystitis, with gallstones, a diagnosis that none would question under any circumstances, inasmuch as the symptoms were as typical of a case of cholecystitis, with gallstones, as they possibly could be. The patient had had typical attacks of gallstone colic when in the hospital, where they could watch him closely. His abdomen was opened with the expectation of finding a distended gall-bladder with stones in it. He could feel a tumor from the outside before operation. After the abdomen was opened he found a collection of fluid below the liver, above the colon, to the outside of the gall-bladder, accompanied by slight adhesions, the fluid amounting to about ten ounces. The gall-bladder was not thickened nor distended and contained nothing. The cavity which he opened and drained was studded with miliary tubercles to the naked eye, but he could find nothing of the kind anywhere else in the immediate neighborhood in the abdomen. The cavity was drained and the patient got well temporarily, so as to leave the hospital. He had not the general appearance of a tuberculous patient. No miliary tubercles were found in any other part of the body. The patient was in apparently good health.

Dr. L. L. McArthur said we might hope in the future to operate on cases of tubercular peritonitis far more early than in the past, perhaps before the period of ascites had developed. By the removal of the enlarged lymphatic glands, that not infrequently could be clinically palpated, we might cure the patient symptomatically and prevent those later stages which were so frequently hopeless. He, too, had furnished evidence which, to the unbiased mind, went to prove that occasionally primary peritoneal tuberculosis resulted from the swallowing of the bovine bacillus. Koch had lately turned so squarely against his former dictum as to say it never produced a human tuberculosis. Nevertheless, cases were now to be found in the literature, as quoted by Fürst. He thought if we had the opportunity to make earlier operative interference we could save many cases now lost.

Dr. Daniel N. Eisendrath said the case of Dr. Holmes brought up the point of the acute onset of tubercular peritonitis. He had met with two such cases. One was a young man whom he saw last spring on account of what appeared to be a tumor in the abdomen. The patient stated that two months previously he was taken sick at Indianapolis with a sharp pain in the right iliac region, and the physician who treated him for appendicitis told him there was no question but that he had appendicitis. Eisendrath saw the patient two months later, when the patient had a prominence which fluctuated distinctly to the right side at about the level of the umbilicus. He could replace it and palpate it bimanually. A tentative diagnosis was that the tumor had no connection with the appendicitis, and it was thought that the case was one of hydronephrosis or mesenteric cyst. In opening the abdomen a large abscess cavity was found, which was limited to the median line, extending downward to the region of the appendix, backward as far as the midaxillary line and upward to the middle of the liver. The case proved to be one of encapsulated tubercular peritonitis, which had begun acutely with a sharp pain. A second similar case was that of a woman whom he saw in consultation. This case also proved to be one of typical tubercular peritonitis.

Dr. A. J. Ochsner cited a particularly interesting case. He had operated upon a patient for gastric ulcer, with pyloric obstruction. There was at this time no sign of tuberculosis of the peritoneum, but within six months the patient returned with symptoms of obstruction, and it seemed to him that something had gone wrong with the operation, but upon opening the abdomen it was found that

these symptoms of obstruction were due to a very violent diffuse tuberculosis of the peritoneum, from which the patient had recovered under treatment. The observations of Mayo in regard to tubercular peritonitis and tuberculosis of the intestines were of great value, because they had brought out clinically the fact of infection through the intestines. The cases of patients that Dr. Mayo reported all came from a portion of the country where pulmonary tuberculosis is exceedingly rare. They practically all came from families in which there was no tuberculosis; they all came from families in which raw milk was used to a great extent, and these patients had nothing to indicate that they had tuberculosis except the local condition. Again, practically all of them recovered as soon as the abdomen was opened and drained, and they had remained well as long as they took sterilized milk afterward. This, he believed, was the strongest anti-Koch demonstration that had been made.

Dr. D. A. K. Steele said that within the last two weeks he had operated on two cases of tubercular peritonitis. A patient upon whom he had operated thirteen days ago was a young Assyrian woman who had many irregular, nodular tumors which could be left in the abdomen. When he opened the abdomen he found the mesenteric glands were enlarged, together with some thirty or fifty others, which were the size, some of them, of a hazlenut, while others had attained the size of a hen's egg. It seemed rather formidable to shell out all of them, as the intestines were intensely injected. There was no evidence, apparently, of tubercular peritonitis, but he took it to be a tuberculosis of the mesenteric glands, involving all the glands in a profuse manner. He shelled out one of the glands for diagnostic purposes, closed the abdomen and left the other glands *in situ*.

Dr. A. E. Halstead said that he reported a case three years ago, at a meeting of the American Medical Association, of miliary tuberculosis of the abdomen on which he had operated. A diagnosis of acute appendicitis had been made. A large number of enlarged mesenteric glands were found, so many that it was not thought wise to remove them. Some of these glands were as large as a hen's egg, and the abdominal cavity was studded with tubercles. The patient finally recovered, after about three months, and was sent to Colorado. Later she developed a postoperative hernia. On returning to Chicago at the end of three years she had apparently recovered from the tuberculosis. He operated on her for the hernia, inspected the abdominal cavity at the time and was unable to find even a trace of the previous peritoneal tuberculosis, excepting that here and there was a small calcarous body representing a gland. She was absolutely free from all evidence of tuberculosis. This case would indicate that operative treatment, as far as removing the glands was concerned, was not so essential. It would seem to him to be an operation of great magnitude to remove all the glands, and if these patients recovered without such an operation, by simply opening the abdomen and treating the case as one of tuberculosis from a hygienic and dietetic point of view, it would seem that operation on these cases might not really be necessary.

Dr. Holmes, in closing the discussion, stated as his belief that the big gall-bladder in his case had produced in the course of less than a week enormous ascites by pressure upon the portal vein, and he thought that the ascites was a predisposing factor toward the localization of the tuberculosis in the peritoneum, and that the peritoneal tuberculosis was only a part of a general miliary tuberculosis, which had showed itself in the lung and in the capsule of the liver and genitorurinary organs.

PARTIAL GASTRECTOMY FOR CARCINOMA OF THE STOMACH.

Dr. D. W. Graham exhibited a specimen taken from a man 60 years of age who gave a history of gradually failing health for six or nine months previous to operation. There was apparently no obstruction of the stomach, but there was greatly disturbed nutrition and digestion, stasis and occasional vomiting. Operation was undertaken, first, as an exploration. A tumor could be felt through the abdominal wall, and it was found to involve the stomach some little distanec away from the pylorus and implicated the anterior wall largely. There were no adhe-

sions. The tumor was freely movable, and as there were no adhesions he considered it a good case for partial gastrectomy, which was performed. The patient died on the fourth day after operation from peritonitis.

ENLARGED MIDDLE PROSTATIC LOBE.

Dr. Graham exhibited an unusually large prostatic middle lobe. This enlarged middle lobe had not been suspected as the cause of the prostatic obstruction before the operation. The man was 62 years of age and had prostatic trouble for two or three years, so that he had to resort to catheterization most of the time in order to pass urine. Examination through the rectum showed some enlargement and bagging down of the bladder, that is, the postprostatic pouch which is usually found in these cases. This was removed, after which he explored through the bladder and through the rectum, and concluded to leave the lateral lobes, which did not seem to be much enlarged. It was surprising to note the changes that took place after he had removed the tumor. It was simply snipped off; it stood up as a sessile mass.

ABSCESS OF THE PROSTATE.

Dr. Graham reported a case of abscess of the prostate in a man 63 years of age who had been troubled for eight or ten years with frequent urination. Some months before the operation he had passed pus with the urine, not mixed with the urine, as is usually the case in cystitis, but pus would be passed following urination. The prostate was very large, and when he removed it the left lobe had an abscess in which there was an opening as large as a lead pencil nearly on the surface, looking toward the bladder, the upper posterior surface, and a cavity into which the opening led, containing half a dram or more of pus.

Dr. A. J. Ochsner, in connection with the specimen exhibited by Dr. Graham of carcinoma of the stomach, demonstrated and illustrated some points in the technic of the operation.

EXHIBITION OF CLIPS.

Dr. Jacob Frank exhibited small clips which he saw used in Landau's clinic while on a visit to Berlin. These clips may be used for fastening sheets to the patient and preventing them from being displaced. There were many opportunities presented for the use of these clips in surgical work. For instance, in the removal of the prostate, after the sound was removed from the bladder, the scrotum could be fastened to the abdomen by one of these clips; the clip kept it out of the way and there was no danger of injuring the testicles. He also found these clips useful in making a mastoid operation, clipping the ear to the cheek. He recommended their use in surgical work.

A regular meeting was held Feb. 2, 1906, with the President, Dr. D. A. K. Steele, in the chair.

ESOPHAGEAL POLYP REMOVED BY OPERATION.

Dr. W. R. Cubbins, by invitation, reported a case of esophageal polyp removed by operation, and exhibited the specimen. The patient was 45 years of age, married, occupation roofer. He had been previously healthy; he gave no history of any disease. During the administration of an anesthetic for the reduction of a dislocated shoulder joint the patient vomited, and during this act the tumor was extruded from the mouth, which was grasped and measured, so that it protruded four inches outside the mouth. Patient objected to removal of the tumor at this time. After this it was necessary to anesthetize patient again for another operation, and several attempts were made to remove the polyp by introducing a forceps down through the esophagus, but were unsuccessful. Shortly after this patient began to develop symptoms of obstruction. The tumor seemed located at the sternal notch. For over half an hour it was impossible to get fluids up or down. Patient could neither vomit nor swallow. At the end of three-quarters of an hour the tumor seemed to pass down, so that the patient was again able to swallow water or milk and other liquid food. He had become very much emaciated when he appeared the second time. He was now prepared for an operation on the

neck, and attempts were made to nauseate him so that he would throw up the tumor. His stomach was filled with water; he was given some apomorphia, but no fluids came up. He was promptly anesthetized, and attempts made to draw the tumor from the throat. Dr. William E. Schroeder and the speaker did a lateral esophagotomy, after having located the esophagus with the stomach tube; they found the tumor situated on the anterior portion of the esophagus, with the pedicle a little to the left of the median line just above the larynx and cricoid cartilages, and extending down into the esophagus for about seven inches. It was ligated and tumor removed, and the wound closed with packing. The tumor measured sixteen centimeters in length, just above the lower end it was rather cone-shaped, and was five centimeters in diameter, and at the pedicle one centimeter. It weighed 210 grams. The lower end was eroded when they removed it. When it was first extruded, six months before, there was no erosion of the lower end. The tumor was exhibited.

DIAGNOSIS OF ESOPHAGEAL LESIONS.

Dr. W. B. Sippy read a paper on this subject. First, he took up functional and anatomical diseases of the esophagus, one of which is related to sensation, the other to motility. Sensory and motor disorders were discussed at length. As to ulcer of the esophagus, it seldom occurred except in association with carcinoma. There have been less than forty cases of peptic ulcer of the esophagus reported. Ulcer of the esophagus may be readily detected by the esophagoscope. By far the most common and serious disorders of the esophagus are related to conditions producing obstruction to the lumen of the tube. The early diagnosis of esophageal obstruction is very important. The first symptom is usually discomfort or pain occurring during the ingestion of food.

He exhibited a specimen of dilatation of the esophagus due to cardiospasm, showing a gastroenterostomy, which had been performed for the relief of an alleged pyloric stenosis. Tumors of the esophagus may be benign, but are usually carcinomatous. Sarcoma may invade the esophagus from surrounding structures. Cicatrix, causing esophageal stenosis, is usually associated with a history of swallowing caustic acids or alkalies, although in some cases the incident is forgotten, and careful questioning is necessary to bring out such history. The history, course of the disease, and passage of bougies are usually sufficient for the diagnosis of cicatricial stenosis of the esophagus. If not, the esophagoscope may be used to advantage.

Diverticula of the esophagus are pouch-like sacculations of a portion of the circumference of the tube. Three forms based on etiology are recognized: Pressure diverticula, traction diverticula, and traction-pressure diverticula. These forms were discussed at length. Spasm of the lower end of the esophagus, if long continued, results in dilatation of the esophagus, and unless relieved, emaciation and finally death from starvation are likely to occur. Although not many cases are reported in the literature, the condition is not rare, and because of its seriousness the clinical picture should be more generally known.

In discussing the case of Dr. Cubbins and paper of Dr. Sippy, Dr. D. W. Graham said that one striking point was the little disturbance which the tumor in Dr. Cubbins' case caused before it became so large. He had derived benefit from Dr. Sippy's paper. He had seen one of the cases referred to by Dr. Sippy in consultation, only once, however, and had advised the use of the stomach tube. The patient subsequently fell into the hands of Dr. Sippy, who cured her of the cardiospasm, which he and her former attending physician had failed to recognize.

Dr. William E. Schroeder said the maceration at the end of the tumor in Dr. Cubbins' case was due to trauma, as the first time the tumor was out its end was smooth. The diagnosis of such tumors is usually made by accident or not at all. As to Dr. Sippy's paper, he would like to say a word with reference to trauma of the esophagus. About eight years ago a recent graduate decided that it was necessary to wash out his brother's stomach. Accordingly he procured a soft stomach tube, and proceeded to pass it in the case of a young man, 28 years of age, who, in having his stomach washed out, expressed great pain im-

mediately the tube came to the cardiac end of the esophagus, and the fluid was passed it. The case came to postmortem in short order, and it was found that there were no pathological changes in the lower part of the esophagus, but that the tube had perforated the esophageal wall and the left thoracic cavity was filled with water. Microscopical examination showed the esophagus was perfectly normal; the stomach was normal. Patient had eaten something which did not agree with him, and he thought it was the proper thing to have his stomach washed out. Here was a serious accident following a simple procedure.

Dr. Daniel N. Eisendrath asked Dr. Sippy in regard to the practical value of the esophagoscope; and whether any microscopical examinations had been made in these cases of cardiospasm. He also asked whether the administration of large quantities of bismuth in these cases and of getting an *x*-ray shadow of the spindle-shaped dilatation would not be a great aid?

Dr. Louis Greensfelder said the swallowing of foreign bodies, such as fish-bones, small particles of chicken bones, etc., not infrequently caused abrasions of the mucous membrane of the esophagus, and produced esophageal abscesses. Another point was the occurrence of typhoidal ulcers at the lower portion of the esophagus, which Dr. Sippy omitted to mention.

Dr. Sippy, in closing, said, as to the use of the esophagoscope, that its chief value was for the removal of foreign bodies. This instrument, in the diagnosis of lesions, afforded relatively little aid, particularly with regard to the diagnosis of diverticulum of the esophagus. As to its value in differentiating cicatricial stenosis from carcinoma of the esophagus, in most cases a diagnosis could be made without the use of the esophagoscope, but there were cases in which a good deal of difficulty might be encountered, and, in all instances, the esophagoscope was likely to render diagnosis more positive. He said that microscopical examination had been made when cardiospasm was present. Various theories had been advanced as to why idiopathic dilatation of the esophagus occurred. Mikulicz and Meltzer brought forth the idea of primary spasm of the cardia. Rosenheim believed that atony of the wall of the esophagus or primary weakness of the wall of the esophagus was responsible for the development of the dilatation in certain cases. The proper tonus being absent, rapid eating caused undue filling of the esophagus, resulted in sacculation and the lodgment of food; the accumulation of food irritated the wall of the esophagus, which was likely to result in secondary spasm of the cardia. Kraus advanced the theory that degeneration of the pneumogastric nerve was a cause of idiopathic dilatation of the esophagus.

PANCREATIC CYST.

Dr. Edward H. Ochsner exhibited some concretions which were found in a pancreatic cyst. He also exhibited a trocar which he had used for four years. The reason why this trocar always works is because both the tube and the stylet are made of gun-metal and are made with the same care and in the same manner as an ordinary all-metal syringe, while the ordinary trocars on the market depend for their vacuum-producing power upon packing, which is ruined by a few boilings. The instrument exhibited can be boiled with all the other surgical instruments, and after having been used a thousand times, is working just as well to-day as it did when it was new.

DIAGNOSIS AND TREATMENT OF COXA VARA.

Dr. John L. Porter discussed this subject. The discussion was further participated in by Drs. Wallace Blanchard, Louis Greensfelder, and the discussion closed by Dr. Porter.

Dr. D. A. K. Steele exhibited photographs of a case of cavernous lipoma before and after operation, which he reported at a previous meeting. He also showed the tumor he had removed. He reported an interesting case of single kidney in the median line, with two ureters. This case was discussed at length by Dr. F. Kreissl, after which the Society adjourned.

FULTON COUNTY.

The thirty-third meeting of the Fulton County Medical Society convened in the parlors of the Churchill House in Canton, May 1, and was called to order by Vice-president Chapin at 1 o'clock p. m. Minutes of previous meeting were read and approved. Members present: Harrison, Sutton, Blackstone, Robb, Stoops, Oren, Scholes, Blackburn, Chapin and Ray.

Dr. Stoops, auxiliary committeeman on legislation, reported that the army bill was in the hands of the chairman and its future lay with him. The question of establishing a new cabinet office of public health should be urged wherever possible, also government regulation of indigent consumptives. Drs. Coleman and Scholes moved that Dr. Stoops draw up resolutions regarding legislation and present them after the literary part of the program. Dr. Coleman presented a very interesting paper on gallstones, which was freely discussed by all present.

Dr. Oren read a paper on "City Ethics," calling forth general discussion. Drs. Stoops and Sutton presented the following resolutions, which, on motion of Drs. Blackburn and Scholes, were adopted:

"*Resolved*, That the Fulton County Medical Society hereby indorse the original pure-food bill as passed by the Senate and recommend its adoption by the lower house without change or amendment; and

"*Resolved*, That we regard the House committee amendment providing for an expert commission as an effort to thwart the original intent and purposes of the bill and as dangerous, as by this amendment the matter of food inspection is taken from the hands of the Bureau of Chemistry and placed in the hands of a few chosen chemists; and

"*Resolved*, That a copy of these resolutions be forwarded to our congressman, Hon. G. W. Prince, and that we respectfully request him to support the original bill and to oppose said amendment."

The secretary read resolutions adopted by the Pike County Medical Society condemning the reduction of examining fees by the life insurance companies. Drs. Oren and Stoops moved that we adopt the resolution as expressing our position on the question. Carried. Dr. E. E. Davis, of Avon, asked permission to join the Knox County Medical Society, because it is impossible to attend in this county without losing too much time. The secretary was instructed to grant the request.

Drs. Blackstone and Scholes moved that our representative support the protective feature to be brought up at the state meeting. D. S. RAY, *Secretary*.

LIVINGSTON COUNTY.

The Livingston County Medical Society held its tenth semi-annual meeting in the city hall in Pontiac, April 19, with thirty members present. Dr. Lewis, of Fairbury, was elected president; Dr. Baker, of Pontiac, vice-president, and Dr. Ross, of Pontiac, secretary. Five new members made application—Drs. Kuhn, of Fairbury; Morgan, of Cornell; Barr, of Dwight; Kilbourne, of Ancona, and Marsh, of Odell. They were elected to membership in the society. The charges of unprofessional conduct which had been preferred against a member at the last meeting were laid on the table for one year. Dr. Rabe, of Dwight, petitioned the society for a rehearing in his case and the petition was laid on the table for a year. The society passed a resolution indorsing the wise, liberal and self-sacrificing policy of the Chicago *Tribune* in its stand against fraudulent "patent medicines" and nostrums.

The society passed a resolution condemning the cut in the prices of medical examinations and urged the members to charge $5.00 for all old-line insurance examinations and from $2.00 to $3.00 for all fraternal insurance examinations. Dr. N. M. Otis was elected the delegate of this society to the state convention and Dr. P. C. Wikoff the alternate.

Dr. J. D. Scouller, Jr., read an interesting paper on "Tuberculosis of the Kidney," showing microscopic slides. A free discussion followed. Dr. G. C. Lewis, of Fairbury, read a paper on "Moral Standard of the Medical Profession." This paper was far above the average of medical literature heard in county societies and was discussed by a number of physicians. The annual address of the president was delivered by the retiring president, Dr. E. H. Fitzpatrick. It contained much excellent thought and showed a familiarity of the author with subjects which are too often neglected by members of our profession.

Dr. J. N. McCormack, of Bowling Green, Ky., being present, favored the society with a thirty-minute talk, which was greatly appreciated by the society.

The evening session was held at the Methodist Church, where Dr. McCormack addressed about 200 citizens. His address was very interesting and instructive, both to the medical profession and to the laity. We would only be repeating what has so often been said in the JOURNAL about Dr. McCormack's lecture if we should write a page article about what the profession and people think of it here.

Our visitors from outside of our county were Drs. Shirm, of Chenoa; Culberson, of Piper City; Ensign, of Rutland; Dicus, of Streator, and McCormack, of Bowling Green, Ky.

JOHN ROSS, *Secretary.*

MACOUPIN COUNTY.

The Macoupin County Medical Society met in the hall of the Business Men's Club of Gillespie with twenty-five members present. Among those present were Drs. D. A. Morgan, Nilwood; E. A. Bleuler, H. S. Collins, L. H. Corr, J. P. Denby, C. J. C. Fischer, J. Palmer Matthews and J. M. Barcus, of Carlinville; E. B. Hobson, J. M. English, Charles D. King, of Gillespie; H. A. Pattison, of Benld. New members elected were J. H. Riffey, Girard; J. H. Davis, Carlinville; Thomas H. Hall and William M. Gross, Gillespie.

At the morning session the following resolutions were passed in memory of two deceased members:

"WHEREAS, By death has been removed as a member of this society Dr. Charles Ed Smith; and

"WHEREAS, By his removal this society has lost one who was a charter member; and

"WHEREAS, By his death his family has lost a faithful and generous supporter; therefore be it

"*Resolved*, That we tender the bereaved family our sincere sympathy and that a page of the records be set apart to his memory."

"WHEREAS, By death has been removed as a member of this society Dr. George Herbert Gilson; and

"WHEREAS, By his removal this society has lost a member who was at one time its efficient secretary; and

"WHEREAS, We realize his family has lost a faithful, generous supporter; therefore be it

"*Resolved*, That we tender the bereaved family our sincere sympathy and that a page of the records be set apart to his memory."

A resolution of sympathy was extended to Dr. Gross in his recent sad bereavement by the death of his beloved wife.

The Pike County Medical Society sent resolutions condemning the action of the large life insurance companies in reducing the fees from $5.00 to $3.00. The society indorsed the resolutions, believing it to be false economy.

After an excellent banquet, prepared by the local fraternity, the society listened to a lecture by Dr. Walter O. Ryan, of Springfield, on "Gallstones." Twenty cases were reported and specimens exhibited. The symptoms are recurring

attacks of pain and bilious indigestion. Only 20 per cent. of cases are jaundiced. The jaundice is produced by large stones in the common duct obstructing the flow of bile. Chills and fever are caused by infection of the gall-bladder, extending through the common duct. Excellent results follow operation and drainage.

A paper on some cases of acute otitis media of obscure etiology was read by Dr. Charles D. King, of Gillespie. Dr. Palmer Matthews reported a circular of instructions by Colonel Gorgas, of the Panama Canal Zone, to the sanitary inspectors. Pictures of mosquitoes in various stages of development were shown and the history given of their modes of conveying infection of malaria and yellow fever.

A unanimous resolution was carried thanking the local physicians for their hospitality. Officers for next year were elected as follows: President, Dr. English; vice-president, Dr. J. Pitt Matthews; secretary, Dr. E. A. Bleuler; treasurer, Dr. Palmer Matthews.

MERCER COUNTY.

The Mercer County Medical Society held its annual meeting in the Courthouse in Aledo, May 1, 1906. The president, Dr. H. S. Allen, not being present, Dr. H. E. Morrison was elected president *pro tem.* There were present Drs. Morrison, Sells, Kleinsmid, McKelvey, Hainline, Boyer, Ramsey, McClanahan, Mackey, Miles, Winbigler, Moore, Hamilton, Burtnette and O. B. Will, district councilor, of Peoria.

After transacting routine business and some informal discussion, the society adjourned to the Merchants' New Hotel, where a sumptuous banquet was prepared for the members and their wives. Covers were laid for twenty-two.

The society was called to order at 1:30 p. m. Drs. J. E. Kleinsmid, Boyer, Porter and Hamilton were duly elected to membership.

The following officers were elected for the ensuing year: President, V. A. McClanahan, Viola; vice-president, Walter Miles, Viola; secretary-treasurer, I. E. Burtnette, Joy; board of censors, J. E. Kleinsmid, Aledo; W. N. Boyer, Aledo; G. H. Moore, Joy; delegate to state meeting, V. A. McClanahan; alternate to state meeting, M. G. Reynolds.

B. R. Winbigler read a very able paper on "Hysteria." J. D. McKelvey gave an interesting paper on "Gastritis." After these papers had been discussed O. B. Will closed the program with an address on "The Benefits of Organization," which was very instructive and entertaining. A vote of thanks was extended to Dr. Will by the society.

The fee bill was taken up and thoroughly discussed, and by a vote of the society it was decided that $1.50 should be the minimum fee for day visits and $2.00 for night calls in all cities and villages of the county for local physicians, and that mileage be charged in all obstetrical calls in the country. Society adjourned to meet in Viola on the second Tuesday in October, 1906.

I. E. BURTNETTE, *Secretary.*

MORGAN COUNTY.

SOCIETY FOR THE PREVENTION OF TUBERCULOSIS IN JACKSONVILLE.

A committee appointed by Morgan County Medical Society made arrangements and called a meeting at Public Library, May 1, 1906, at 8 p. m., for purpose of organizing a society for prevention of tuberculosis. Dr. Charles Mix, of Chicago, addressed the meeting on "Tuberculosis." After the address a society was organized to affiliate with State Society on Tuberculosis. A constitution and by-laws were adopted. The society will be known as Jacksonville Society for the Prevention of Tuberculosis.

The following officers were elected: President, Andrew Russell; first vice-president, Dr. Josephine McMilligan; second vice-president, Rev. R. O. Post; secretary, Dr. R. O. Hardesty; treasurer, Mr. Edward Crabtree, banker; medical director, Dr. J. W. Hairgrove; executive committee, Thomas Worthington, W. E. Veitch, E. M. Vasconcellas, Mrs. Joseph Heinl, Mrs. Carl E. Black.

T. O. HARDESTY, *Secretary.*

The May meeting of the Morgan County Medical Society was held at the library, May 10, 8 p. m., twenty members present. Dr. Geo. Shambaugh of Chicago, by invitation, spoke on the relation between Rhinology and Otology. He said in part: Everybody recognizes some relationship between these two branches of study, but the exact relationship is known only to specialists, and to them only of recent years. People apply for help for the eye earlier than for the ear; hence the oculist entered the field as a specialist. Beyond the removal of foreign bodies and large polypi, little was done with the ear. Laryngology developed rapidly after the introduction of the laryngoscope. Rhinology is a comparatively recent science. The men who developed this science are still living. Most that is valuable has been learned within the last twenty-five years or so, and yet rhinology, though much younger than otology, has, on account of its relationship to the latter, assumed tremendous importance of late years. The important chapter in the science of rhinology is the establishment of the relationship between the milder or so-called catarrhal forms of inflammation of the middle ear, and conditions in the naso-pharnyx, frequently overlooked, or considered unimportant.

After reviewing the anatomy of the ear and the different stages of inflammation frequently found therein, the speaker proceeded to show that it was not the chronic or the suppurative inflammations of the middle ear that were the most important from the physician's standpoint, because these were generally beyond relief. It was in the subacute cases of otitis media or tubal catarrh in the young that are to be benefited. This form of tubal catarrh becoming chronic, is the most common cause of deafness in middle life. It begins in childhood and can only be treated to advantage at that period. The most prolific causes of this form of disease are: First, enlarged faucial tonsils, always the seat of disease. Second, and most important, enlarged pharyngeal tonsils or adenoids. These press on the mouth of the Eustachian tube, and are even a more common cause of deafness than enlargement of the faucial tonsils. Adenoids cause trouble long before they are large enough to cause obstruction in breathing, and an early removal will save the hearing of many a child. These cases are frequently overlooked till much damage is done to the hearing. The chronic otitis media of middle life is not relieved by treating the nose. From five to fifteen is the time of life when the damage is done, and relief must be obtained at that age or not at all. One of the commonest symptoms of tubal catarrh and its accompanying cause is recurrent lack of attention to what is said. At times there may even be an apparent stupidity, which comes from the child's inability to hear what is said at that time. This is especially noticeable in school. The teacher may complain of it. At other times, when the tube is open, the child hears better. It is at this stage that the general practitioner should be on the watch for recurrent colds, enlarged tonsils, etc., even before the stage of mouth breathing.

Dr. Adams said that children should be examined in school by simple tests of sight and hearing and reports made to parents and superintendent of all defects. At present only aggravated cases of adenoids receive attention in most communities.

Dr. Norris read a paper on interne work in Mercy Hospital, Chicago. He said that students desiring interneship generally form themselves into quiz classes, wherein they thoroughly review the entire four years work. They generally remain in the city during the summer and complete all senior dispensary work as far as possible, in order to give as much time as possible to review during the coming year. The examination lasts three days and the six highest are appointed. The first three begin their work the following June, the other three in December. The service lasts eighteen months, divided into periods of two months each, with complete change of service in each period. Every six months three men go out and three new ones enter.

Mercy Hospital, in the year 1904, admitted 2760 patients, of which more than half were surgical. The first six months the externe, as he is called, must pay his own expenses, and his work is mostly laboratory work and septic dressings.

He has to examine thirty to fifty specimens of urine a day, and sometimes stomach contents; he is second assistant in postmortems, and occasionally gives an anesthetic. Pathology is the best and hardest externe work. The externe examines about one hundred, referring all doubtful tissues to Professor Zeit. A few postmortems come in this service. The third service of two months consists of dressing all pus cases. The pus man has forty or fifty cases to dress each day. He is not allowed in the operating room. After six months, the externes become juniors, and six months later, seniors. The junior now begins regular hospital work. He keeps complete records of all cases admitted, dresses clean cases, removes sutures, puts on casts and extensions. He is second assistant in all operations and scrubs patients before operations. The senior takes his orders from the attending doctor each morning, and, in turn, directs the work of his assistants, viz., the externes and juniors, for whose work he becomes responsible. The surgeons make their rounds every day to private cases, but less often to the wards. The charity wards are left more largely to the interne. The senior is first assistant in most operations, and is generally given, by each regular operator, one or two major and many minor operations to perform. Each senior interne has seventy to ninety patients on the surgical service, about fifty on the medical, and ten to twenty obstetrical. He makes his rounds morning and evening and notes condition of each patient. The senior medical interne has almost complete charge of his ward cases. In obstetrics he delivers about two-thirds of the cases.

If the earlier work has been satisfactory, the attending men can make the senior work more valuable in many ways, by giving more operations and by allowing more freedom in treatment of cases. The two months' service arrangement gives the interne a chance to work with a large number of good men. On the other hand the staff men complain that, as soon as an interne is trained or can be of value, he goes on another service. The doctors all help the internes in every possible way, encourage them in their work, and extend them every courtesy. An interne can enjoy every day of his service and can make many friends, both among patients and in the profession.

Dr. H. C. Woltman read a paper on the interne service of Cook County Hospital, Chicago. Synopsis: The resident staff of the hospital consists of thirty-nine resident internes. Each interne serves three terms of six months each, or eighteen months in all. These terms are known as the junior, the middle, and the senior service. Each junior, at the beginning of his service, is assigned to a senior for six months, and is under his supervision for that service. The work is very hard. The junior in the medical wards, for instance, is on duty from 8 a. m. till midnight. The patients are assigned to the seniors by rotation, the junior is notified of each new arrival assigned to his senior, and gives instruction for immediate treatment, such as bath, etc. He then wheels the patient's bed into the examining room, makes a thorough examination from head to foot, and writes a systematic history of the case, family, personal, etc., together with the findings of the examination. This requires two hours on an average. This history becomes a part of the patient's hospital record. Writing histories is a great hardship, and consumes all of the junior's spare time, and even then he often finds himself in arrears with his work. If the patient dies and the body remains four days in the morgue a postmortem is held. Here the history, diagnosis and treatment are read and the findings compared therewith. This is the supreme test of the accuracy of the interne's work. Along with history writing in the junior medical service comes pathological work, as examination of urine, stomach contents, etc., requiring two to four hours in the laboratory every morning, and, on Wednesdays and Saturdays, he must assist at public postmortems. His time is very fully occupied. The second three months is his surgical service under the same senior interne. He spends from four to six hours each day in the dressing room, dressing the wounds of fifteen to thirty cases, with the help of two nurses. In this work he has to handle numerous injuries resulting from fights, holdups, policemen's clubs, etc. Many patients are drunk, and in an ugly mood,

and resist treatment. Every scalp wound is shaved and laid open, in order that no skull fracture may escape detection.

The junior service, as a whole, means days of toil, and nights of labor. In addition to the routine drudgery of examinations, histories, dressings, etc., there are the poison cases, carbolic, gas, morphin, etc., scalds, burns, and crushing injuries of every variety; sunstroke in summer and frozen extremities in winter, all of which demand immediate attention. The patrolman sounds the gong, denoting an emergency, and dashes at full speed into the foyer, whence the patient is hurriedly transported to the ward, and treatment begun. These cases take precedence of all other work, and the routine work must be done later.

Beginning the middle service of six months, the interne enters a new field of activity. He spends six weeks as anesthetist for major operations; six weeks in the contagious ward; six weeks in the obstetrical ward, and six weeks in pathological work, attending every postmortem, securing specimens of every organ or tissue showing signs of disease. This, together with the junior work, brings him in contact with perhaps one hundred and fifty postmortems as a preparation for his senior work. He also serves by rotation in the receiving office with one other where every case is received, diagnosed and classified. Fifty to seventy-five apply each day for admission, and an incorrect diagnosis may be a serious matter, and upon the interne not only bring discredit but even suspension. When we consider the great number and variety of patients, many unable to speak English, many intoxicated or malingering, and the further fact that the diagnosis is disproved at all possible wards to which the patient is assigned, the difficulties of this work may be readily seen. The obstetrical ward yields about one birth each day. The male children are all circumcised, and the mother and child usually kept about three weeks.

The senior service is the most satisfactory of all. The senior interne has a junior at his command to do not only the routine drudgery, but to carry out any investigations he may see fit to order. He can arrange his own work to a certain extent and pay special attention to any subject he chooses. He now has an opportunity to experiment in treatment of cases, and attend the more important clinics. He has more freedom in treating patients than in a private hospital, as all are charity cases, and the attendant physician expects to be consulted only in extreme cases. He chooses the patients illustrative of different diseases for use by the clinician, and if he choose a specialty, can always find material for its study. Politics enters largely into the workings of the hospital. The attending physicians and surgeons get their appointment from the County Commissioners, and frequently influences other than professional ability serve to put a man on the attending staff.

Taken as a whole, the experience is well worth the effort, in spite of hard work, and the risk of infection, septic, syphilitic or tuberculous. It not only clinches the practical points of a physician's training and fits him to meet emergencies, but the constant association with forty other internes tends to make him more liberal and tolerant.

Dr. Potts:—Delicacy tends to forbid an ex-interne from fully stating the enormous benefit derived from an interneship in a large hospital. The examination of patients and the history writing is the most valuable training in this work. The benefit derived from interne work far exceeds that of his previous medical training. Responsibility in the class room and in the hospital are very different. While more freedom is given in a public hospital, this advantage is more than outweighed by coming into closer contact, in a private hospital, with the good men on the staff, being under their supervision, watching their methods, and being compelled to give due weight to the personal likes and dislikes of private patients as required in after practice.

PERRY COUNTY.

REPORT OF A CASE OF MULTIPLE NEURITIS.*

J. S. CLELAND, B.Sc., M.D.
SWANWICK.

K. C., male, aged 60, has always been a strong, hard-working farmer; never had any serious illness; did not use alcoholics habitually nor to excess; has been troubled at times for several years with pains in lumbar region, which incapacitated him from labor. These attacks were generally attributed to rheumatism. The present trouble began Oct. 15, 1905, with pains in the extremities and general soreness, such as usually attends la grippe. These pains increased in severity for the next few days, requiring the free use of aspirin, and morphin occasionally, to secure any degree of comfort for the patient. The origin of the pains was obviously in the nerve trunks and muscles of the extremities, they being in a hyperalgesic condition. The sense of touch was found to be considerably impaired. Patient complained of a burning sensation in the feet. Some œdema and redness of the ankles were noted. After a few days paralysis of the extremities became quite evident and progressed until the use of the limbs was practically lost. The extensor muscles of forearm and leg were more affected than the flexors, though not to the extent of producing typical wrist-drop or foot-drop. Atrophy of the affected muscles and emaciation progressed rapidly. There was no involvement of bladder or rectum and urinalysis was negative. Bowels were generally costive. Delirium was present for some time and dyspnea when patient was recumbent. During the second week the patient was troubled several days with dysphagia, which developed into an almost complete paralysis of the muscles of deglutition. Small quantities of somatose and tonic beef were administered with much difficulty. Medication was practically suspended for several days, when, fortunately, this distressing condition began to subside. The sensory symptoms improved rapidly from this time, in marked contrast with the motor symptoms and with convalescence, which in general was quite tedious. Patient has so far recovered as to be able to be around, but the muscles of the extremities are still considerably impaired and incapable of much exertion.

The diagnosis of multiple neuritis rests principally upon the combination of motor and sensory symptoms involving the same parts, atrophy and diminished electrical excitability. The gradual onset and wide distribution of the paralysis are rather characteristic.

The prognosis, as stated by authorities, is good, except in cases due to alcoholism or toxemia. The majority recover almost entirely. Fatal results are generally due to paralysis of the heart or respiratory muscles or the entrance of food into the larynx, owing to anesthesia of the epiglottis and paralysis of the pharyngeal muscles.

Multiple neuritis requires differentiation from diseases affecting the spinal cord. Anterior poliomyelitis is characterized by the persistence of pains and other sensory symptoms, age, history, absence of tenderness in nerve trunks and symmetrical paralysis. Myelitis proper presents bladder and rectal involvement, increased patellar reflex and a more rapid onset and progress. In tabes dorsalis we find a less acute onset of paralysis, Argyll-Robertson pupil, Romberg symptom, ataxic gait, lightning pains and specific history. Spinal hemorrhage generally presents localized pain in the back. Neuralgia is usually unilateral in contrast with the bilateral nature of multiple neuritis.

The etiologic factors assigned by authorities and observers are quite numerous and diverse. In the case here reported no satisfactory causative agency has been discovered. Malaria and rheumatism have been considered as possible factors in producing the attack.

The following abstracts of reports from literature illustrate the diversity of the causes assigned and some of the varied symptomatic manifestations of the disease:

Hart[1] reports the case of a woman who had taken trional several years for insomnia, and who developed tingling in the arms, loss of knee jerks, hyperesthe-

* Read at a meeting of the Perry County Medical Society.
1. Hart: American Journal of Medical Sciences, April, 1901.

sia, degeneration reaction in extensor muscles of the arms, delirium with hallucinations and later extreme general hyperesthesia, with gradual improvement and finally complete recovery.

In H. Schwabe's[2] case a man exposed to carbon dioxid became unconscious, weak, confused and delirious. Some time after recovering consciousness, pain developed in the lower extremities and a sensation as if the legs were lost, followed by paralysis in the right leg and weakness in the right arm. Knee jerks were normal, with diminished ankle clonus and plantar reflex in the right leg. Optic nerve involvement with impaired vision was an unusual feature in this case.

Wharton Sinkler[3] reports cases following the administration of arsenic and lead, and septic multiple neuritis occurring after miscarriage and labor.

Stephenson[4] gives morphinism of twelve years' duration, or possible poisoning from the gold cure, as the causative factor in a case he describes.

Price's[5] patient, a girl of 8 years, with symptoms of multiple neuritis, improved rapidly on administration of quinin. She had had malaria some time before the attack.

Jeliffe[6] gives three cases caused by wood alcohol, two of which were due to breathing the fumes.

Pershing[7] reports a case following ptomaine poisoning after the ingestion of lobster and stale beer.

Marsh and Smith[8] give a detailed report of a case beginning with a slight pharyngitis, followed by two weeks of general weakness, no pain, but great nervousness, then seven weeks of pain, swelling and tenderness in the extremities, with hallucinations. The patient was free from pain one month, but developed increasing mental difficulty and died after five days of high fever. The etiology in this case remained in doubt, though a number of possibilities were carefully considered.

The treatment of these cases is largely symptomatic and conditions must be met as they arise. Relief of pain is important and quite necessary during the acme of sensory disturbance. Aspirin, a salicylic acid ester, has been found very useful in relieving painful affections of this character. It appears to have a more pronounced analgesic effect than the coal-tar or other salicylic-acid derivatives, and can be administered in much larger dosage with less disturbance or depressing effect. Besides its anodyne qualities, it also has a curative effect in cases of rheumatic origin. Opiates may be added where a more decided anodyne effect is necessary. Strychnia is very useful as a stimulant and tonic. Elixir glycerophosphate compound forms a valuable tonic and reconstructive, especially during convalescence. The addition of more strychnia than the formula contains is generally desirable at this time.

PEORIA COUNTY.

The last month has been a jubilee month for the Peoria City Medical Society, as we have had Dr. McCormack and Dr. Sippy, of Chicago, at our meetings. The three meeting were very largely attended. The first meeting, on Tuesday evening, April 3, was held in the society rooms in the Observatory building, with the president, Dr. R. A. Kerr, in the chair. Those present were Drs. Collins, Hanna, C. E. Davis, E. L. Davis, Wallace, Bane, Floyd, Roskoton, Kelly, Brobst, Lucas, S. M. Miller, Bacon, Green, Barbour, Kerr, Allison, Will, Eckardt, Sidley and Plummer.

Dr. Collins presented a patient, 62 years old, from whom he had removed two-thirds of the stomach three and one-half weeks before. The patient had complained of stomach symptoms for about three years. He had occasional

2. H. Schwabe: Muench Medical Woch., No. xxxix.
3. W. Sinkler: American Medicine, June 18, 1904.
4. Stephenson: New York Medical Journal, April 16, 1904.
5. Price: American Medicine, June 3, 1905.
6. Jeliffe: Medical News, March 4, 1905.
7. Pershing: American Medical, July 29, 1905.
8. Marsh and Smith.: Boston Medical and Surgical Journal, Feb.12, 1903.

spells of eructations of gas with pain and vomiting during that time. When he was dieted he felt much better. A small ventral hernia was discovered in the median line just above the umbilicus, about one-fourth inch in diameter, through which protruded a small portion of the omentum. An examination of the stomach contents showed an increase in the amount of hydrochloric acid and an increase in the total acidity. There was no sarcine, no Boas-Oppler bacillus and nothing pointing to a stenosis in the pylorus. The hemoglobin was only 50 per cent. The ventral hernia might have caused the pain and vomiting, but it did not explain the decrease in the amount of hemoglobin. No tumor could be felt through the abdominal wall. On account of the diminished hemoglobin an exploratory incision was made and a carcinoma 7 cm. in diameter was found in the middle of the lesser curvature. Fully two-thirds of the stomach was removed by the Mayo method and an anterior gastroenterostomy made with a Murphy button. The patient made an uneventful recovery. The button passed on the eighteenth day. The case was interesting because the examination of the stomach contents pointed more to ulcer than to carcinoma, and bore out the conclusions of William J. Mayo that an exploratory incision was necessary to diagnose the exact condition of the stomach. Dr. Collins presented the patient, a portion of the stomach that was removed with the carcinoma and a microscope with slides taken from the specimen. The society then listened to a very interesting paper by Dr. Collins, who read a paper on "Abdominal Incisions," in which he discussed the value of the various incisions with reference particularly to the blood vessels and trophic nerves. He described the transverse incision for pelvic work, which he had used in twenty-six cases. He had performed all the various pelvic operations through this incision, including two hysterectomies, and had removed the appendix in twenty-four of the twenty-six cases. The incision had proved adequate for all the various pelvic operations and gave a neat scar, concealed in a few weeks by the pubic hair.

That evening Dr. McCormack gave an address before a large and representative audience at the Women's Club, in which he talked not only to the members of the medical profession of the community, but to the clergy, local bar, school teachers, business men and general public. He urged on them the necessity of proper organization as a means of improving the condition of the profession and of increasing its influence for good in the community. He had a hearty welcome and we hope that his visit among us may be productive of great good to the profession and to the public.

The meeting of April 24 was held in the parlors of the Cottage Hospital. Dr. B. W. Sippy, of Chicago, gave a clinic before the society and presented several very interesting cases, which were at that time unable to leave the hospital. The meeting was one of the largest ever held in Peoria. Dr. Sippy presented four cases, the first one of multiple sclerosis in a girl of 23 years of age, with a history dating from the age of 19. The second case was one of carcinoma of the stomach, with a high grade of motor insufficiency. The third case was one of ulcer of the stomach, located at the pylorus. The fourth case was one of ulcer of the stomach, with a history of hyperacidity for thirty-seven years. Dr. Sippy presented these cases with his usual thoroughness and was given a vote of thanks by the society.

There being no further business to transact, the meeting adjourned until the following Tuesday evening, when Dr. Robert C. Bourland, of Rockford, Ill., will read a paper before the society.

On Wednesday afternoon, April 16, at 4 o'clock, the members of the medical society met in their rooms in the Observatory building and listened to a talk by Dr. McCormack on "What Can Be Accomplished by County Societies." The meeting was an exceedingly interesting one, as it gave the members an opportunity to meet Dr. McCormack. All the officers of the society were present, and on roll call the following members were found present: Drs. Roberts, Eckardt, Bacon, Floyd, Will, Gelder, Collins, Hinckle, Brobst, Wallace, Hayes, Wulstein, Dowdall, Kerr, Sidley, Lucas, Hasson, Sutton, Early, Cooper, Marcy, Green, Roskoton, Miller, Stephenson, Barbour, McFadden, Whitten, and seven visitors.

RANDOLPH COUNTY.

The quarterly meeting of the Randolph County Medical Society was held at Sparta, Tuesday, April 10, 10:30 a. m., in Dr. H. L. Gault's office. The chairman, Dr. C. G. Smith, of Red Bud, called the meeting to order. Roll call showed the following members present: C. G. Smith, A. D. Steele, J. T. Russ, H. L. Saunders, Thomas Robertson, J. W. Robertson, J. W. Weir. Minutes of last meeting were read by the secretary, explaining the change of the former by-laws. A motion was carried to dispense with the regular rules by appointing a board of censors. The applications of new members were acted upon as they were handed in. They were Drs. F. A. Wnorowski, Stubsville; J. W. Robertson, Coultersville, and F. X. Sedlman, Bremen. The first paper on the program was read by Dr. J. T. Riess, "Should Physicians Prescribe Proprietary or Secret Preparations?" The paper brought out quite a lengthy discussion by all members present and some very interesting remarks. Dr. A. H. Meisenbach, of St. Louis, Mo., read a paper on "Cholelithiasis: Early Diagnosis and Treatment." Discussion followed by H. L. Gault and Thomas Robertson. Thomas Robertson, of Stubsville, read a paper on "Eclampsia" and reported four cases he had treated successfully by giving large doses of Norwood's tincture of veratrum viride internally and hypodermically and performing venesection on each with good results. Discussion followed by C. G. Smith, H. L. Gault, A. D. Steele, Dr. Guthrie, of Sparta, one of the oldest practicing physicians in the county, and Dr. T. S. Tibby, of Oakdale, Washington County, were present as visitors. A vote of thanks was tendered Dr. A. H. Meisenbach for his excellent paper, also to Dr. H. L. Gault, whose office we occupied during our meeting. The next quarterly meeting will be held in Evansville, July 10. A. D. STEELE, *Secretary.*

ROCK ISLAND COUNTY.

The regular bi-monthly meeting of the Rock Island County Medical Society was held Tuesday afternoon, April 10, 1906, at the Hotel Harms, Rock Island. Dr. G. L. Eyster, president of the society, presided. The minutes of the last meeting were read and approved. Drs. E. M. Minnick and R. R. Whiteside, both of Moline, were unanimously elected to membership. As this was the annual meeting of the society, election of officers took place and resulted as follows: President, F. H. Gardner, Moline; first vice-president, A. B. Hall, Rock Island; second vice-president, W. O. Beam, Moline; secretary, Ralph Dart, Rock Island; treasurer, J. E. Asay, Rock Island.

Dr. G. L. Eyster, the retiring president, was elected delegate to the state convention.

Dinner was served at 6:30 in the café, after which the meeting was again called to order and the society listened to a paper by Dr. Beam, entitled "Professional Fees and Their Collection." The secretary read a communication from Dr. Kreider, editor of the ILLINOIS MEDICAL JOURNAL, relative to the medical defense fund. It was moved and seconded that our delegate be instructed to vote for the medical defense fund. After considerable discussion the motion carried. The meeting adjourned at 10:30. Thirty-three members were present. The next meeting will be held on the second Tuesday of June. RALPH DART, *Secretary.*

SANGAMON COUNTY.

The Sangamon County Medical Society held its regular monthly meeting in the Lincoln Library, May 14, 1906. There were thirty-five in attendance, including Drs. Harris of Chicago, Percy of Galesburg, and Ransom of Rockford. The minutes of the previous meeting were read and approved. The application of Dr. Roy F. Rogers for membership was read, and by vote of the society, the rules were suspended and the applicant elected to membership. Drs. Allen and Lockwood of Virden were elected as associate members.

A communication from the secretary of the Pike County Medical Society was received, with a resolution from that society, deprecating the action of the old line life insurance companies in reducing the fees of local examiners from $5.00

to $3.00. The secretary of this society was instructed to inform the Pike County Society that $5.00 was the fee established by this society for such examination and was a part of our fee-bill. Dr. A. L. Brittin should have read the paper of the evening on "Fractures of the Femur, with Special Attention to Overlapping of Fragments and Laceration of Soft Parts." In his absence, the discussion was opened by Dr. Percy, who discussed, in general, the splints used in this class of fracture, and expressed a preference for the Verity splint, in most cases. He also spoke of the beneficial results of thyroid extract in fractures. Dr. Ransome related some very satisfactory experiences with the pneumatic ambulatory splint. Dr. Harris thought that the ambulatory splint had been overrated. He prefers a simple coaptation splint until the plaster can be applied. Dr. Dixon showed the Dixon modification of the Hodgens splint and illustrated its application. The meeting closed in order.

R. D. BERRY, *President.*
C. R. SPICER, *Secretary.*

STEPHENSON COUNTY.

The second quarterly meeting of the Stephenson County Medical Society was held at the rooms of the Court House at 1 o'clock, April 23, 1906.

The society adopted the following resolutions:

"*Resolved*, That the Stephenson County Medical Society tender its cordial thanks to the Chicago *Tribune* for the generous and self-sacrificing war it is waging against adulterated foods and fraudulent proprietary and patent medicines, and pledge the support of its members to the *Tribune*."

Also the following resolution in regard to the medical legal defense fund was adopted:

"*Resolved*, That the Stephenson County Medical Society urge its members to agree to make no examinations for fraternal orders for less than $2.00 or $3.00, or for old-line insurance companies for less than $5.00, and to make no answer to companies asking them to accept the reduction of fees."

The meeting then adjourned to the Grand Opera House, where an address was given by Dr. McCormack, the national organizer of the American Medical Association. The public meeting held by Dr. McCormack in Freeport at the Grand Opera House was certainly a great success. Owing to the antagonistic attitude taken by the superintendent of schools in regard to the meeting (though there were a number of the Board of Education in favor of dismissing the schools and allowing the teachers to attend), we were unable to secure the presence of the teachers. We greatly regret we were not able to have more of the public present, but our hour of meeting was somewhat out of the ordinary, it being at 1:30 in the afternoon. But in the evening, when Dr. McCormack gave his heart-to-heart talk to the physicians, we had a great number of physicians present, both from within and outside of the city, also a number of the clergy, and it certainly resulted in great good. We were particularly glad the ministers were able to hear Dr. McCormack's talk; it was apparently a great revelation to them as to the status of affairs and as regards the "patent medicines" and quack doctors, a number of whom are found in our city. Every one who heard him expressed the greatest satisfaction and appreciation.

K. F. SNYDER, *Secretary.*

VERMILION COUNTY.

The Vermilion County Medical Society met May 14, 1906. A committee consisting of F. N. Cloyd, Solomon Jones and J. H. McIntosh, was appointed to aid the committee of the Children's Home Society of Chicago in attempting to establish a state colony for epileptics in Illinois. H. W. Morehouse offered a motion commending the action of the American Medical Association in appointing a committee on chemistry and pharmacy, which was unanimously carried. On motion it was decided to invite the Champaign County Medical Society to meet with the society in joint session on June 11, they to furnish one paper for the evening. The paper of the evening was by H. W. Morehouse, on Perinephritic Abscess, which brought out a general discussion, lead by J. M. Guy. Adjourned.

E. E. CLARK, *Secretary.*

NEWS OF THE STATE

Dr. L. E. Sherwood has located in Bowen.

Dr. William L. LeBoy, of Chicago, has located in Fairbury.

It is reported that there are several cases of smallpox in Decatur.

Dr. Newell, of Onarga, was in Chicago recently for some special study in surgery.

Dr. E. E. Gordon, of Cairo, is now in New York doing postgraduate work in medicine and surgery.

Dr. W. S. Strode, of Lewiston, will locate in Canton, forming a partnership with Dr. E. W. Reagan.

Dr. A. C. Staley, formerly of Farmer City, is now located in Chicago, with an office at 100 State Street.

Dr. George A. Denman returned to Tuscola, April 30, after having spent two weeks in Detroit, Toledo and other cities.

Dr. J. M. Beveridge, of Buckingham, has bought the practice of Dr. W. K. Farley, of Oregon. Dr. Farley will remove to Fulton.

Dr. McLafferty, of Aledo, will soon remove to Portland, where he has been elected chief physician of the Portland Sanitarium and Hospital.

A case of smallpox was discovered recently at 1918 Wabash Avenue, Chicago. The patient was taken at once to the isolation hospital, the place fumigated, and the people who had been exposed were vaccinated.

Three hundred and eighty persons took part in the grand march at the annual dance given by the freshmen, sophomore and junior classes of the Dearborn Medical College to the senior class, which was held in the Coliseum on the night of May 1.

Dr. P. H. Barton, Danville's oldest practicing physician, was found unconscious on the floor of his office following a stroke of paralysis. Dr. Barton is 70 years old and has practiced medicine for forty years. Owing to his age it is feared he can not recover.

Vincenzo Colletta, a druggist at Polk and Clark Streets, and Dr. Adolph C. Brendecker, another pharmacist at West Randolph and Peoria Streets, were arrested at the instigation of the Hull House authorities for selling cocain without a physician's prescription.

Dr. W. E. Taylor, superintendent of the Western Hospital for the Insane at Watertown, has been appointed by Governor Deneen a delegate to represent Illinois at the National Conference of Charities and Correction, which meets at Philadelphia, May 16 and 17.

Dr. Thomas L. Gilmer, of Chicago, accompanied by a party of eight friends, will journey from Oshkosh, Wis., to Chicago in a forty-five-foot cabin cruising launch. The boat will be provisioned for a month's cruise, but it is expected to make the trip in about two weeks.

The police ambulances of Chicago are to be given over to the City Health Department within a few days, in accordance with the plans of Health Commissioner Whalen and Chief of Police Collins. Each of the eight ambulances will be under the charge of a physician.

Dr. G. M. Guiteras, of the United States Marine Hospital, suggests that the Health Department of Cairo, Ill., should cover the ponds in the vicinity with oil to stop the breeding of mosquitoes. This, it is thought, would decrease the malarial conditions and greatly improve the health of the people of the city.

The smallpox reported at Zion City threatens to become epidemic unless proper precautions are taken. Dr. James E. Egan, of Springfield, secretary of the State Board of Health, will insist upon strict compliance with the quarantine and vaccination rules and will detail an inspector to be stationed at Zion City.

A faculty farewell dinner was given to Dr. Palmer Findley, assistant professor of gynecology and obstetrics of Rush Medical College, on April 26, at the Auditorium Annex, on the occasion of his departure from Chicago to take the position of professor of gynecology in the Omaha Medical Department, University of Nebraska.

Dr. A. Judson Booth, tried in Judge Kersten's court, Chicago, on charges made by five girls, all under 16 years of age, who are at present in the Chicago Woman's Refuge, was found guilty by the jury and sentenced to eighteen years in the penitentiary. The motion for a new trial was made. Booth had offices at Robey Street and Evergreen Avenue and at 51 LeMoyne Avenue.

A motion for a new trial in the case of Dr. Charles A. Nichols, a prominent physician of Urbana, has been denied by Judge Humphrey in the United States District Court. The charge brought against Nichols was that of using the mails to defraud Mrs. Susan Day, of Urbana. He was fined $250 and costs, with imprisonment until paid, the total amount being $1,700, which Nichols will pay.

Health Commissioner Charles J. Whalen's ordinance for a new division in the health department, to be called the bureau of food and meat inspection, has been recommended by the council health committee for passage. All the positions will be under civil service. The committee also recommended for passage an ordinance for a license fee of $25 and inspection of restaurants by health officials.

Members of the family of Dr. Camillo Volino, 946 Flournoy Street, Chicago, a well-known Italian physician, deny the report that the doctor is dying from blood poisoning caused by a scratch received on his arm during an operation which he performed recently. The attending physician states that the condition of his patient is not at all alarming and that he will be in good condition within a week.

Investigation into the manner of the death of Mrs. Ruth Cantel, wife of Overseer H. E. Cantel, of Zion City, has been demanded by her brother, Harry Stevens, of Paso Robles, Cal., and it is possible that Mrs. Cantel's body will be exhumed for a postmortem examination. Mrs. Cantel died in great agony recently without medical attendance. The case is creating much excitement in Zion City.

The life of Dr. L. A. Mueller, 306 Division Street, Chicago, was imperiled a few days ago by three shots which were directed at him through the window of his office. Owing to the refusal of Dr. Mueller to discuss the matter, the name of the assailant has not been made public. In the office of another physician near by the shells of three empty cartridges corresponding in caliber to the bullets fired were found.

Mrs. Eva Bergquist Selders, 1556 Milwaukee Avenue, Chicago, was arrested recently, suspected of having performed an illegal operation upon Mrs. Annie Hagman, 977 North Rockwell Street, which resulted in the woman's death. Dr. Selders was directed to appear at the inquest upon the body of Mrs. Hagman, but failed to do so. The matter was reported to the police and her arrest followed. She will be held pending further investigation of the case.

With but one exception this year the fewest number of deaths from consumption were reported during the week ending May 12. In the week of February 14 only 53 such deaths were reported. This week there were only two more, or a total of 55. The weekly average since the first of the year has been 65; during the corresponding period last year there were 1,715 deaths from consumption reported, a weekly average of 90. In most other respects the health conditions are fairly satisfactory.

The Illinois Training School for Nurses celebrated its twenty-fifth anniversary May 3 at the Chicago Woman's Club, Fine Arts Building. Of the twenty-five charter members of the board, nine are still among the directors. Since its establishment 876 nurses have graduated from the school. At its organization the school had two wards in Cook County Hospital. It now has charge of Cook County Hospital proper, the Children's Hospital, contagious hospital, and also sends some nurses to the Chicago Lying-in Hospital.

Dr. Nicholas Kern, of Thawville, and Dr. Carson, of Chatsworth, have been indicted by the grand jury in Paxton for murder in performing a criminal operation on Miss Nellie Clark. They were released under $10,000 bonds, the date of their trial being fixed for June 5. Prominent lawyers have been engaged for the case, among them being Attorney Samuel Alschuler, former candidate for governor of Illinois. The trial promises to be one of the most noteworthy that has taken place in central Illinois for several years.

It is reported that the directors of the Lincoln Hospital, 500 La Salle Avenue, Chicago, have forced Dr. Henderson, the medical superintendent, to resign. The directors charge a shortage in the accounts of from $1,000 to $5,000 and allege that at a time when there were only three patients in the hospital the debts had reached $2,500. Expert accountants

have been put on the books and a statement is expected soon. Dr. Henderson claims that the hospital owes him $1,000 which he loaned it. He has been succeeded by Dr. H. E. Coger.

In the case of Dr. C. N. Hazelton, of Morrison, who brought suit against Dr. W. B. Carolus, of Sterling, for $4,500, a verdict was rendered in favor of the defendant. Dr. Hazelton sued for this amount on the grounds that when Dr. Carolus sold him $3,750 worth of Eureka copper stock he agreed to take it back and refund the money should it prove an unsatisfactory investment for the purchaser. Dr. Carolus denied ever having made such a proposition. The case was strongly contested and the attorneys for Dr. Hazelton have announced that they will carry it to the higher courts.

The Home for Destitute Crippled Children, of which Dr. John Ridlon is surgeon in charge, has recently completed a new building at a total cost of about $40,000. Mrs. R. H. McElwee donated $25,000 for the construction of the out-patients' department, which is erected as a memorial to her daughter. The home is located at 46 Park Avenue, corner of South Paulina Street. It is equipped with all the modern conveniences for the care and development of crippled children, including baths, playroom, roof garden, gymnasium, *x*-ray, plaster and brace manufacturing room and a modern operating room.

The appeal for cheaper antitoxin to save the lives of hundreds of children who contract diphtheria has been answered. Dr. Heman Spalding, chief medical inspector of the city, hopes it will not be long before the remedy is within the reach of even the poorest citizens. The McCormick Memorial Institute for Infectious Diseases is supplying the city with antitoxin at less than half the price charged by the so-called "antitoxin trust." The preventive also is being supplied to the Cook County Hospital. The antitoxin is manufactured by the endowed institution on a farm in the outskirts of the city. Dr. Ludvig Hektoen, Prof. E. O. Jordan and Dr. George Weaver are in charge of the work.

The hospital of the Illinois Steel Company may be closed by the police unless it complies with the law. The police claim that the institution does not report serious accidents, that it is being operated without a city license. It is stated that no monthly report is ever made of admissions, discharges and deaths to the health department, as provided by the city ordinance. The Illinois Steel Company has maintained that the hospital is a private institution and, therefore, could be operated as it pleased. Corporation Counsel J. Hamilton Lewis warned the corporation two months ago that it would have to comply with the ordinance and take out a license, but no step has yet been taken in that direction.

The Chicago Union Hospital has asked the Circuit Court to restrain Commissioner of Buildings Bartzen and Chief of Police Collins from interfering in the erection of a new hospital building at Wellington Avenue and Dayton Street. Work on the structure has been ordered stopped on the ground that the building as being erected is in violation of a city ordinance which forbids a hospital within 400 feet of property used for

public school purposes. It is declared that this building is within 400 feet of the Robert Morris School, Barry Avenue and Bissell Street. In the injunction filed in behalf of the hospital it is admitted that the building being erected is within 340 feet of the school property line, but more than 400 feet away from the school building.

JOINT MEETING.

There will be a joint meeting of the Aux Plaines Branch of the Chicago Medical Society and the Fox River Valley Association, the component society for Kane and McHenry counties, at the Courthouse, Wheaton, Ill., June 20, 1906, at 10 a. m. All physicians are cordially invited to attend. Dr. James W. McDonald, of Aurora, will read a paper at the morning session on "Injuries to the Brain." Dr. Ellis K. Kerr, of Oak Park, will read a paper in the afternoon on "Diagnosis of Carcinoma of the Stomach." Dinner will be served by the ladies of the Congregational Church at $1.00 per plate.

NEW MEMBERS OF THE AMERICAN MEDICAL ASSOCIATION.

During the month of May the following members of the Illinois State Medical Society became members of the American Medical Association:

Barryte, Evan, L., Chicago.
Ballinger, J. R., Chicago.
Bingley, M. A., Chicago.
Burr, Albert H., Chicago.
Coff, Weller H., Paris.
Davis, David John, Chicago.
Dodge, W. E., Chicago.
Edwards, Frank H., Chicago.
Fisher, W. D., Chicago.
Garwood, J. P., Princeton.
Howe, Harriette A., Chicago.
John, F. D., Chicago.
Jones, Martin D., Chicago.
Lee, W. George, Chicago.
Lane, Robt. Nelson, Danville.
Murphy, N. A., Paris.
Patton, Charles L., Springfield.
Sedlmair, Frank H., Bremen.
Van Derslice, James Warren, Chicago.
Vopata, W. J., Chicago.
Whitmer, L. W., Chicago.
Wood, Henry Willis, Sheldon.

MARRIAGES.

Maurice B. Wolff, M.D., Chicago, to Miss May Steiner, of St. Louis, May 15.

Paul J. Burrell, M.D., Winslow, Ill., to Miss Leda Smith, of Cadiz, Miss., recently.

Frank E. Hicklin, M.D., La Salle, Ill., to Miss Mary Fickle, of Sandwich, Ill., April 11.

DEATHS.

Michael A. Glennan, M.D., Rush Medical College, Chicago, 1878, died at his home in Ludlow from kidney disease April 11.

William Osborne, M.D., Bennett College of Eclectic Medicine and Surgery, Chicago, 1882, died at his home in Chicago, April 19.

Herman Kirschstein, M.D., University of Breslau, Germany, one of the oldest German physicians of Chicago, died at his home, April 29, aged 77.

J. G. Porter, M.D., Chicago Homeopathic Medical College, 1899, of Clinton, died in Hahnemann Hospital, Chicago, April 24, after a surgical operation.

Howard R. Weber, M.D., University of Maryland School of Medicine, Baltimore, 1886, formerly of Highland, Ill., died at the Illinois Southern Hospital for the Insane, Anna, April 26.

Robert N. Rickey, M.D., Rush Medical College, Chicago, 1869, while despondent on account of ill health, committed suicide by taking morphine at his home in Gray's Lake, Ill., April 30, aged 55.

Naomi A. Pierce Collins, M.D., Women's Medical College, Chicago, 1885, for many years a practitioner of Decatur, Ill., died at her home in Mahomet, Ill., May 3, after an illness of several weeks, aged 44.

Ralph R. Thompson, M.D., Medical College of Indiana, Indianapolis, 1900, of Mooresville, Ind., examining surgeon for the relief department of the Pennsylvania Railroad in Chicago, died at the Gault House in that city, May 4, from acute nephritis, aged 31.

Frederick J. T. Fischer, M.D., Medical College of Ohio, Cincinnati, 1878, a member of the Illinois State Medical Society and the DuPage County Medical Society, a veteran of the Civil War, died suddenly at his home in Elmhurst, Ill., April 27, aged 63.

Arthur Burley Hosmer, M.D., Chicago Medical College, 1876; grandson of Dr. Isaac Harmon, who was the surgeon on duty at old Fort Dearborn; a member of the American Medical Association, Illinois State and Chicago Medical societies, American Orthopedic Association, Association of Military Surgeons of the United States; ex-president of the Chicago Orthopedic Society; professor of orthopedic surgery in the Chicago Polyclinic; orthopedic surgeon to St. Luke's Hospital; one of the most prominent and well-known orthopedic surgeons of Chicago, who devised several valuable forms of orthopedic appliances, notably the flat-foot plate which is known by his name, died at his home in Chicago, May 5, from pneumonia, after an illness of eight days, aged 62.

CHANGES OF ADDRESS MADE BY THE STATE BOARD OF HEALTH FROM FEB. 10, 1906, TO MAY 10, 1906.

Aby, Frank Staunton, from * to Nunda, McHenry County, Ill.
Alrutz, Louis Ferdinand, from * to 2131 West Monroe Street, Chicago.
Armstrong, Jay L., from * to 481 Wabash Avenue, Chicago.
Anderson, Carolus H. R., from * to 1106 Republic Building, Chicago.
Artin, A. S., from * to Springerton, White County, Ill.
Auter, Milton H., from 1818 Darrow Avenue, Evanston, to 1721 Benson Avenue, Chicago.
Avery, Wilbur M., from Compton, Lee County, to Pawpaw, Lee County.
Backhusen, H. R., from * to 535 Belmont Avenue, Chicago.
Backus, John B., from * to 5701 Monroe Avenue, Chicago.
Baker, Nellie M., from Onargo, Iroquois County, to Urbana, Champaign County.
Baldwin, Floyd McK., from Muskegon, Mich., to 192 East Superior street, Chicago.
Barclay, Robert Donaldson, from Altamont, Effingham County, to 3551 Calumet Avenue, Chicago.
Barclay, Robert D., from 3551 Calumet Avenue, Chicago, to Cerro Gordo, Piatt County.
Barker, Frank M., from * to 1072 Sheridan Road, Chicago.
Barlow, Nathan, from St. Louis, Mo., to Lebanon, Ill.
Barlow, Nathan, from Lebanon, St. Clair County, to Murphysboro, Jackson County.
Bamberger, George Washington, from * to 4744 Champlain Avenue, Chicago.
Bassett, Victor Hugo, from Baltimore, Md., to 5809 Jackson Avenue, Chicago.
Beard, Charles H., from 34 Washington Street, Chicago, to 605 Venetian Building, Chicago.
Beedy, Lora L., from * to 808 Pratt Avenue, Chicago.
Benner, Charles Russell, from Emmington, Livingston County, to 1300 West Sixty-third Street, Chicago.
Beveridge, James M., from Buckingham, Kankakee County, to Oregon, Lee County.
Bibb, Merwyn R., from * to 2900 State Street, Chicago.
Binkley, John T., Jr., from * to 408-92 State Street, Chicago.
Blair, James H., from Aron, S. D., to 3633 Ellis Park, Chicago.
Blanchard, John A., from Cobden, Union County, to Cairo, Alexander County.
Blouke, Milton B., from 1222 Washington Boulevard, Chicago, to suite 827 Marshall Field Building, Chicago.
Bonine, James Gordon, from * to 904 Masonic Temple, Chicago.
Briney, William F., from 130 Dearborn Street to 182 State Street, Chicago.
Brown, John Bernard, from 408 West Sixty-first Street to 549 West Sixty-third Street, Chicago.
Brown, Richard H., from 70 State Street, Chicago, to Centralia, Marion County.
Brown, Roy Earl, from 103 State Street, Chicago, to Washington Courthouse, Ohio.
Brugge, H. J., from * to 1997 West Polk Street, Chicago.
Bunch, Rollin H., from Muncie, Ind., to 234 Ashland Boulevard, Chicago.
Byers, E. M., from Poplar Grove, Boone County, to Belvidere, Boone County.
Campbell, Amos W., from * to 108 Fifth Avenue, Chicago.
Carper, Daniel W., from Henning, Vermilion County, to Seymour, Champaign County.
Carr, James Gray, from * to 918 West Twenty-second Street, Chicago.
Carr, Jesse Myron, from Lincoln, Neb., to 516 West Fulton Street, Chicago.
Carroll, Ellsworth J., from Pontiac, Livingston County, to Quincy, Adams County.
Cater, Gatta M., from * to Morton Park, Cook County.
Cavanaugh, John Algeron, from * to Sherman House, Clark and Randolph Streets, Chicago.
Cessna, Charles E., from Park Ridge, Cook County, to 160 Washington Street, Chicago.

Christian, Albert D., from Freedom, La Salle County, to Seneca, La Salle County.
Clancey, Cornelius L., from * to 1206 Lawrence Avenue, Chicago.
Clark, John Shelton, from Mount Carroll, Carroll County, to 227 W. Adams Street, Chicago.
Clendenen, Irving, from Maywood, Cook County, to 70 State Street, Chicago.
Cline, Corles B., from Mansfield, Piatt County, to Peoria, Peoria County.
Collier, William, from 1701 West Sixty-third Street, Chicago, to 486 Sixty-third Street, Chicago.
Collyer, Albert Edward, from 524 West Madison Street, Chicago, to Lee, DeKalb County.
Corbus, B. Clark, from * to 800, 109 Randolph Street, Chicago.
Craven, William C., from 84 La Salle Street, Chicago, to Nunda, McHenry County.
Dale, William Henry, from * to 5 Langley Place, Chicago.
Damm, Eugene Francis, from * to 192 North State Street, Chicago.
Davis, David John, from * to Rush Medical College, Chicago.
Day, L. A. L., from 59 State Street, Chicago, to 55 State Street, Chicago.
Deason, Frank, from De Soto, Jackson County, to Bush, Williamson County.
De Courcy, James O., from East St. Louis, St. Clair County, to Mascoutah, St. Clair County.
De Pew, C. Chauncey, from La Salle, La Salle County, to Ottawa, La Salle County.
Dodson, Charles A., from Park Ridge, Cook County, to Glenview, Cook County.
Doering, Edmund J., from 2458 Indiana Avenue, Chicago, to Lakota Hotel, Chicago.
Dolder, Felix C., from Joliet, Will County, to 7526 Ellis Avenue, Chicago.
Dryden, William F., from Galva, Henry County, to *.
Duane, Joseph F., from Peoria, Peoria County, to Vienna, Austria.
Dugan, Richard D., from Illiopolis, Sangamon County, to Galesburg, Knox County.
Dugan, W. J., from Lovington, Moultrie County, to Galesburg, Knox County.
Durkee, Alvara C., from Pontiac, Livingston County, to Danville, Vermilion County.
Eales, Irving J., from Belleville, St. Clair County, to 1180 Washington Boulevard, Chicago.
Eastman, Eugene H., from * to 5557 Monroe Avenue, Chicago.
Egan, James C., from Hanover, Jo Daviess County, to 939 Sunnyside Avenue, Chicago.
Ellsworth, Elmer Harvey, from Hot Springs, Ark., to 503 West Adams Street, Chicago.
Elmore, Sidney, from Samoth, Massac County, to Metropolis, Massac County.
Farley, William K., from Oregon, Ogle County, to Fulton, Whiteside County.
Fowler, Charles A., from Malta, DeKalb County, to Oregon.
Fowler, Fred Hill, from * to 4725 Calumet Avenue, Chicago.
Frizelle, Clifton H., from La Salle, La Salle County, to Dixon, Lee County.
Galbraith, George Herbert, from Herrin, Williamson County, to Clifford, Williamson County.
Gann, Joseph Henry, from Grantsburg, Johnson County, to Samoth, Massac County.
Gibson, Sadie F., from Bowling Green, Ky., to 2811 Groveland Avenue, Chicago.
Gorman, Henry, from Belle Plain, Marshall County, to Sedgwick, Kas.
Grassau, Andrew, from Apple River, Jo Daviess County, to Galena, Jo Daviess County.
Gray, Philip M., from 2267 North Paulina Street, Chicago, to Cisne, Wayne County.
Greaves, Joseph Ainsworth, from 669 Madison Street, Chicago, to Marseilles, La Salle County.
Gregg, Mary E., from Riverside, Cook County, to 1925 Kenmore Avenue, Chicago.
Green, Fred R., from 6312 Greenwood Avenue to 103 Dearborn Avenue, Chicago.
Green, Ralph E., from 550 Wilson Avenue, Chicago, to Fontanelle, Iowa.
Habenicht, John, from Wilmont, Minn., to 993 South Troy Street, Chicago.

Halbert, William A., from Salisbury, Sangamon County, to Springfield, Sangamon County.
Hall, Walter S., from Berwyn, Cook County, to 2431 Dearborn Street, Chicago.
Hanawalt, C. G., from Lisbon, Kendall County, to 352 La Salle Avenue, Chicago.
Hanawalt, C. G., from 352 La Salle Avenue to 536 Dearborn Street, Chicago.
Hardt, Harry G., from Jacksonville, Morgan County, to Elgin, Kane County.
Harrison, Edward M., from * to 1104, 42 Madison Street, Chicago.
Hart, William E., from * to 786 East Seventy-second Street, Chicago.
Hayward, Charles E., from Cropsey, McLean County, to Stuttgart, Ark.
Heath, Frederic C., from * to 572 Milwaukee Avenue, Chicago.
Hendricks, Earl L., from Stillman Valley, Ogle County, to Lanark, Carroll County.
Henning, Harry Hugh, from 1502 Edgewort Place, Chicago, to Plano, Kendall County.
Herzman, Morris, from 337 West Eighteenth Street, Chicago, to La Salle, La Salle County.
Herzman, Morris, from La Salle, La Salle County, to Kewanee, Henry County.
Higgins, James D., from 930 Walnut Street, Chicago, to Huntley, McHenry County.
Higgs, John I., from Coulterville, Randolph County, to East St. Louis, St. Clair County.
Hillebrand, Christian, from Freeport, Stephenson County, to Waubay, S. D.
Holsteen, W. F., from 92 State Street to 488 East Sixty-third Street, Chicago.
Howe, Lyston D., from Blackstone, Livingston County, to Arizona.
Hubbard, Orton, from Wesley Hospital, Chicago, to Parsons, Kas.
Jennings, M. C., from * to 2239 Wentworth Avenue, Chicago.
Johnson, John A., from McLeansboro, Hamilton County, to Dale, Hamilton County.
Johnson, Silas Curtis, from Rensselaer, Ind., to 5260 Wabash Avenue, Chicago.
Jones, John Branson, from Waynesville, De Witt County, to Wapella, De Witt County.
Jones, Nathan A., from Mount Pulaski, Logan County, to Plainview, Macoupin County.
Kane, H. H., from * to 267 Michigan Avenue, Chicago.
King, Charles Dilworth, from Will, Montgomery County, to Gillespie, Macoupin County.
Klick, John Joseph, from 276 Ogden Avenue, Chicago, to Presbyterian Hospital, Chicago.
Knudson, F. B., from 389 West Erie Street to 1470 North Troy Street, Chicago.
Kranz, Frank J., from 15 Mantene Court, Chicago, to 707 Milwaukee Avenue, Chicago.
Kunkler, Joseph Everett, from Bloomington, McLean County, to Clinton, Mo.
Lane, Robert Nelson, from Lisbon, Kendall County, to Danville, Vermilion County.
Lee, William George, from 77 East Twentieth Street to 1897 Kenmore Avenue, Chicago.
Leeds, Norman, from Bellmont, Wabash County, to Canal Zone, Central America.
Little, Perry M., from Janesville, Cumberland County, to Willisville, Perry County.
Magahy, Charles Alford, from 1310 Dakin Street, Chicago, to Diamondville, Wyo.
Manchester, Howard D., from Farmington, Fulton County, to Yates City, Knox County.
Martin, Frederick H., from * to Libertyville, Lake County.
May, Leonidas J., from Anna, Union County, to Cobden, Union County.
McCord, William Charles, from 625 Adams Street, Chicago, to Mars, Pa.
McDermon, Edward W., from 497 State Street, Chicago, to Mucogee, I. T.
McGinnis, Edwin, from 830 West Sixty-third Street, Chicago, to Orland, Cook County.
McGuinn, James J., from * to 66 Rush Street, Chicago.
McLean, William H., from Farmersville, Montgomery County, to St. Louis.
Mitchell, Robert Sanford, from Mercy Hospital, Chicago, to Red Cloud, Neb.
Mortensen, M. A., from Springfield, Sangamon County, to *.
Mullins, J. Melvin, from Fairbury, Livingston County, to 147 State Street, Chicago.
Munson, Henry O., from Rushville, Schuyler County, to Alellen, N. M.

Murray, John, from Carbon Hill, Grundy County, to Cuba, Fulton County.
Myers, Louis Winfield, from Elgin, Kane County, to Westhope, N. D.
Norris, Frank A., from Mercy Hospital, Chicago, to Jacksonville, Morgan County.
Orglert, Maria T., from * to 222 Cornell Street, Chicago.
Osbaldeston, Julian T., from 3248 Rhodes Avenue, Chicago, to Indianapolis, Ind.
O'Shay, Frank J., from Braidwood, Will County, to Essex, Kankakee County.
Ostberg, Niles W., from 4305 Oakenwald Avenue, Chicago, to Minneapolis, Minn.
Parker, Charles Eugene, from Sterling, Whiteside County, to Harmon, Lee County.
Parmlee, Olin Earl, from 445 East North Avenue, Chicago, to Lambertville, Mich.
Pease, Bert Charles, from Kirkwood, Warren County, to 1628 West Harrison Street, Chicago.
Peterson, Enoch Fred, from 427 West Congress Street to 1206 Lawrence Avenue, Chicago.
Phemister, Dallas B., from Cook County Hospital to La Grange, Cook County.
Phillips, Charles Eaton, from St. Charles, Kane County, to Colon, Panama.
Pierce, Frank E., from 4801 Forrestville Avenue, Chicago, to 100 State Street, Chicago.
Quick, Edward William, from Cook County Hospital to Appleton, Wis.
Quinn, John Joseph, from 166 La Salle Avenue to 83 East Fullerton Avenue, Chicago.
Rembe, C. H. E. E., from Mascoutah, St. Clair County, to Lincoln, Logan County.
Reno, Clarence G., from Lacon, Marshall County, to Streator, La Salle County.
Ricardo, Daniel, from 547 La Salle Avenue to 4456 Calumet Avenue, Chicago.
Rice, Paul Frederick, from 105 South Central Av., Chicago, to Cannonball, N. D.
Riffey, James Henry, from * to Girard, Macoupin County.
Roberts, Harold H., from Wesley Hospital, Chicago, to Maywood, Cook County.
Roberts, Ira T., from Longmont, Colo., to Johnson City, Williamson County.
Rockey, Amos P., from Los Angeles, Cal., to Assumption, Christian County.
Rose, P. W., from St. Louis to Granite City, Madison County.
Rosenblith, Henry, from 359 West Twelfth Street, Chicago, to 924 South Ashland Avenue, Chicago.
Rothrock, Wilburn Joseph, from 309 Fifth Avenue, Chicago, to Las Vegas, N. M.
Roy, David Grant, from 5119 Dearborn Street, Chicago, to Braceville, Grundy County.
Runkle, George D., from Summum, Fulton County, to Industry, McDonough County.
Scaiefe, Benjamin F., from Sailor Springs, Clay County, to 4036 Russell Avenue, St. Louis.
Schulze, Leonard C., from 796 Flournoy Street, Chicago, to 1558 West Madison Street, Chicago.
Schulze, William C., from * to 126 State Street, Chicago.
Seebold, John L., from * to Madison, Madison County.
Seymour, Ernst de Lacey, from Dwight, Livingston County, to Blackstone, Livingston County.
Simonton, Albert H., from * to 4360 Milwaukee Avenue, Chicago.
Simmons, Margaret E., from * to 3815 Rhodes Avenue, Chicago.
Sisson, Charles E., from Huntley, McHenry County, to Elgin, Kane County.
Smith, G. B., from Brussels, Calhoun County, to Fieldon, Jersey County.
Snarely, John Louis, from Hahnemann Hospital, Chicago, to Sterling, Whiteside County.
Spencer, William Barton, from * to 879 Lake Street, Chicago.
Spurgeon, Glen Charles, from 302 Maxwell Street, Chicago, to Chicago Baptists Hospital, Chicago.
Strohl, Harley, from Waggoner, Montgomery County, to Farmersville, Montgomery County.
Tannus, Ferris, from Clinton, De Witt County, to Mackinaw, Tazewell County.
Tate, Louis Neill, from Milwaukee, Wis., to Carthage, Hancock County.
Terry, Harry Alfred, from St. Louis, Mo., to Tampico, Whiteside County.
Thornton, William T., from 28 Thirty-third Place to 888 Thirty-fifth Place.

Tracy, Evert E., from 34 Washington Street, Chicago, to Prairie View, Lake County.
Truitt, Frank L., from Noblesville, Ind., to Luzern Hotel, Chicago.
Truitt, Frank L., from Luzern Hotel, Chicago, to Noblesville, Ind.
Van Meter, Eugene R., from Lincoln, Logan County, to Elkhart, Logan County.
Von Langan, Caroline M., from * to 2457 Wentworth Avenue, Chicago.
Wachowski, John G., from 4647 South Ashland Avenue to 1835 West Forty-seventh Street, Chicago.
Was, Frank Peter Jacob, from 422 West One Hundred and Sixth Place, Chicago, to Grand Rapids, Mich.
Weth, Stephen Stafford, from 302 Millard Avenue, Chicago, to 326 North Sixty-fourth Avenue, Oak Park, Cook County.
Whare, George B., from Joliet, Will County, to Madison, Wis.
Wheeler, George W., from Prophetstown, Whiteside County, to Paxton, Ford County.
Willits, Ira Raymond, from Keithburg, R. F. D., Mercer County, to 5358 South Morgan Street, Chicago.
Winsett, Clifford Vana, from Iowa to 733 South Lawndale Avenue, Chicago.
Wooley, Ida M., from * to Decatur, Macon County.
Zook, Erle W., from Dunlap, Peoria County, to Peoria, Peoria County

* Outside Illinois or address unknown.

Cystogen-Lithia

Effervescent Tablets of { **Cystogen 3 grains** / **Lithium tartrate 3 grains**

Uric acid Solvent, alkaline urinary antiseptic.

DOSE—One or two tablets in a glass of water, three or four times daily. They should be dispensed in the tubes to preserve the effervescent property.

Where Cystogen is indicated, Lithia is of advantage; Where Lithia is prescribed, Cystogen is indicated.

Indications—Rheumatism, gout, urinary deposits, calculus, cystitis, prostatitis and gonorrhoea. A good urinary antiseptic during convalescence from typhoid and scarlet fever.

CYSTOGEN CHEMICAL CO., ST. LOUIS, U. S. A.

CYSTOGEN PREPARATIONS:

Cystogen—Crystaline Powder.
Cystogen—5-grain Tablets.
Cystogen-Lithia (Effervescent Tablets)
Cystogen Aperient (Granular Effervescent Salt with Sodium Phosphate.)

SAMPLES ON REQUEST.

C L 4

Natural digestive and laboratory experiments have established the interesting fact that HIGHLAND BRAND EVAPORATED CREAM *is more easily digested than either raw, pasteurized or boiled milk.* The protein is precipitated in a fine flaky condition, while that of raw milk is inclined to be more in the form of a lumpy curd. The butter-fat and milk sugar are both very completely digestible and assimilable and the total energy of Highland Brand Evaporated Cream is almost entirely available.

HIGHLAND BRAND EVAPORATED CREAM is the logical substitute food for infants

Where modification is desired, either simple or with prepared cereals, it can be as easily attained as with raw milk, and there is always the satisfaction of *knowing* that here is a milk free from germ life. Under most conditions all that is necessary is to add boiled water with pure cane sugar in sufficient quantity as indicated by the age of the infant. Literature and samples on request.